ANNUAL REPORT

THE MINISTRY OF ENERGY

FISCAL 1984/85

Ministry of Energy

To

The Honourable
Lincoln M. Alexander, P.C.,
Q.C., C.St.J., B.A.
Lieutenant-Governor of the
Province of Ontario

May it please Your Honour:

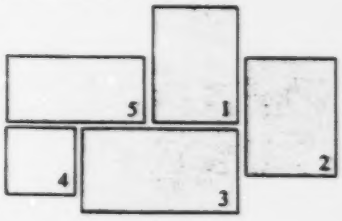
For the information of Your Honour and the Legislative Assembly, it is my privilege to present the Annual Report of the Ontario Ministry of Energy for the fiscal year ending March 31, 1985.

Respectfully submitted,

Vincent G. Kerrio

Vincent G. Kerrio
Minister of Energy

Cover Photographs



Clockwise on chart:

1 *The ministry's TruckSave program is aimed at assisting Ontario's trucking industry to reduce energy consumption by encouraging drivers to use fuel-efficient driving techniques. Almost 250 drivers competed in the TruckSave Fuel Economy Challenge in September 1984.*

2 *Energy education in Ontario begins right in elementary school. Ministry staff work closely with school boards, teachers and other educators across the province to provide a range of services to help teachers tell students about the importance of energy.*

3 *With ministry assistance, Brockville's Grenville Christian College converted its expensive oil heating system to one that burns waste wood. Here, the conversion plans are being inspected in the college's boiler room — just prior to the conversion.*

4 *Dudley the Dragon is the star of the show in* **The Conserving Kingdom**, *a ministry-sponsored play that travels across Ontario each year to help teach primary school children about the wise and efficient use of energy.*

5 *Energy efficiency in the home means less money spent on heating bills. This R-2000 house in Markham offers the ultimate in energy-efficiency — reducing heating bills by up to 75 per cent over similar conventional houses.*

Energy
Ontario

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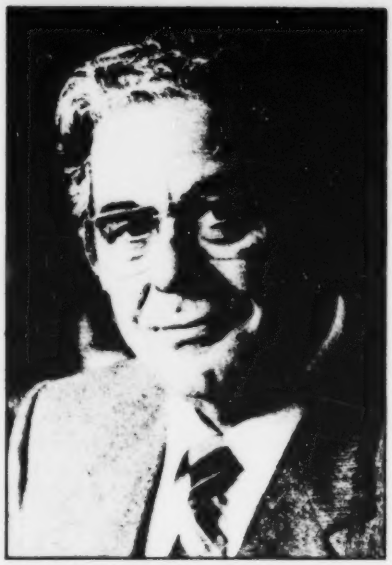


VINCENT G. KERRIO
Minister

A Message from The Honourable Vincent G. Kerrio Minister of Energy

This report is the ministry's record of accomplishment during the fiscal year 1984-85. It contains many of the highlights of the ministry's activities during the year.

The energy climate of 1985 is vastly different from that of the early 1970s, when the Ministry of Energy was formed to represent Ontario's interests in an environment of oil price increases and supply uncertainties. Today, most Ontarians would probably agree that it is no longer necessary to speak of an energy "crisis".

Over the past decade, Ontario has achieved considerable success in both energy conservation and in developing new, energy-efficient technologies.

According to a 1984 report by the International Energy Agency of the Organization for Economic Co-operation and Development, however, Canada remains an intensive per capita user of energy – more intensive, for example, than the United States, Sweden, West Germany, Japan, Britain, France and Italy.

Much progress has been made, but much also remains to be achieved. Forecasts indicate that Ontario's continued economic growth and well-being will involve the consumption of even more energy than at present.

Ontario must therefore continue to play an active role in the development of new programs and policies designed to promote conservation and increase energy efficiency.

Vincent G. Kerrio

VINCENT G. KERRIO
Minister of Energy

Deputy Minister's Message

Fiscal 1984-85 was a year of major change for the Ministry of Energy.

Our mandate was re-examined, our programs were overhauled, and our organization was re-structured. We are now leaner, stronger, and better positioned to anticipate and respond to Ontario's needs in a fast-changing energy world.

This annual report highlights our key policy thrusts, and displays the broad range of ministry activities aimed at making Ontario more energy-wise and energy-efficient. And it documents our success in becoming more productive in applying public resources toward those ends.

DUNCAN M. ALLAN
Deputy Minister

DUNCAN ALLAN
Deputy Minister

Meeting the energy challenge

Energy is a vital and significant factor in Ontario's economy. In our northern climate, we rely on energy supplies which are both secure and reasonably priced. The prosperity of our industries and businesses depends on energy prices that allow them to stay competitive in international markets.

The ministry's mandate is to ensure a supply of energy that meets the needs of Ontario residents and industry at reasonable prices—in a manner consistent with the protection of the environment.

The ministry works closely with Ontario's petroleum industry to ensure fair energy prices to the consumer. Although Ontario's oil and gas reserves are modest, compared to those in the western provinces, government incentives promote industry activity to protect the jobs of workers such as this at a southwestern Ontario refinery.

The ministry is Ontario's representative in energy matters. To ensure that its mandate is met, the ministry has developed policies and programs with five broad themes:

- First, the ministry participates actively in price negotiations with the producing provinces and the federal government *to keep the costs of energy in Ontario reasonable.*
- Second, the ministry supports the *development* of energy sources—both conventional and renewable.
- Third, the ministry promotes the *efficient use* of energy, particularly through new technologies.
- Fourth, the ministry encourages *substitution* of more abundant sources of energy for oil.
- Fifth, the ministry helps develop Ontario's *indigenous* capability in both energy supply and technology.

The ministry directly and indirectly supports research and development, and assists the start-up of pre-commercial energy technologies. The ministry also represents Ontario in national discussions of energy policy.

To accomplish its mandate, the ministry also promotes a greater awareness of energy issues among interest groups and the public at large. The ministry sponsors conferences on energy matters, provides energy information and advice to consumers, and participates in trade shows and seminars about energy.

Some of the ministry's policies and programs are implemented through other agencies — such as Ontario Hydro, the Ontario Energy Board and the Ontario Energy Corporation, each of which produces its own annual report.

Understanding the energy environment

Today's energy environment is much different from that of the early 1970s, when the Ministry of Energy came into being. But Ontario is still Canada's largest user of energy, consuming over one-third of all the energy used in the country.

Only 30 per cent of the energy used in Ontario comes from within the province, so Ontario's perspective on energy must be national and international in scope.

The major energy trends during the 1984-85 fiscal year included:

- a continuing weakness in world oil markets;
- increased competition in energy markets in the United States, particularly for natural gas;
- and a dismantling of the National Energy Policy by the Government of Canada.

The international oil market was weak throughout 1984-85, as OPEC struggled to maintain the $29 (U.S.) a barrel official price by keeping production quotas well below supply capability. For Ontario consumers, this meant reasonably stable energy prices throughout the year.

In the United States, competition increased among oil and gas producers and suppliers, translating into significant savings for U.S. consumers. The decontrol of more than half of all domestic natural gas in January 1985 led to an increase in competition, and significantly lower prices in the gas market.

Marketing innovations in the U.S. —such as direct purchase and spot market sales—became major factors in the natural gas market. In response, Canada's National Energy Board (NEB) adopted more flexible arrangements for approving oil and gas exports—resulting in a significant increase in Canadian exports during the 1984-85 heating season.

In Canada, the new federal government moved to free up the oil and gas industry to encourage it to be an "engine of growth" for the Canadian economy. This view was developed partly in response to industry studies that claimed de-controlling the price of oil and gas and eliminating special federal taxes would lead to several hundred thousand additional work-years of employment over the next decade.

In November 1984, the ministry prepared its own study of the economic impacts of oil and gas price decontrol. The study concluded that industry estimates of job creation were too high — because of over-optimistic levels for industry reinvestment. As well, the industry had underestimated the negative economic impact of energy price increases.

The study also showed that the positive effects of decontrol came from lower natural gas prices, rather than oil decontrol. As a result, the ministry argued that oil decontrol should be accompanied by a simultaneous move to lower natural gas prices.

As well, the ministry hosted a major forum on natural gas pricing during 1984-85. The Industrial Gas Forum - held in May 1984 in Toronto —brought all the major players on the natural gas scene together to share their views and exchange ideas—large consumers, producers, pipeline officials and the natural gas distributors of Ontario.

The one-day meeting resulted in constructive talks on the future of the industrial gas market in Ontario, and helped all those involved achieve a better understanding of the current and future trends in natural gas pricing.

In March 1985, the federal government and western provinces signed the Western Accord—a comprehensive agreement on fiscal and pricing arrangements for oil and natural gas. Highlights of the agreement included:

- decontrol of crude oil pricing on June 1, 1985;
- removal of special federal taxes, such as the Petroleum and Gas Revenue Tax (PGRT);
- gradual phase-out of the Petroleum Incentive Payments (PIPs) over the next few years;
- resolution of a natural gas pricing mechanism by November 1985.

To further encourage industry activity, the Atlantic Accord resolved the jurisdictional dispute between the Canadian Government and Newfoundland over the proposed Hibernia development.

Helping to plan for Ontario's future electricity needs — and ensuring reasonable prices — is a vital role of the ministry. A controller who buys and sells electricity on a day-to-day basis is shown at Ontario Hydro's Richview Control Centre in Toronto.

Photo Courtesy Ontario Hydro

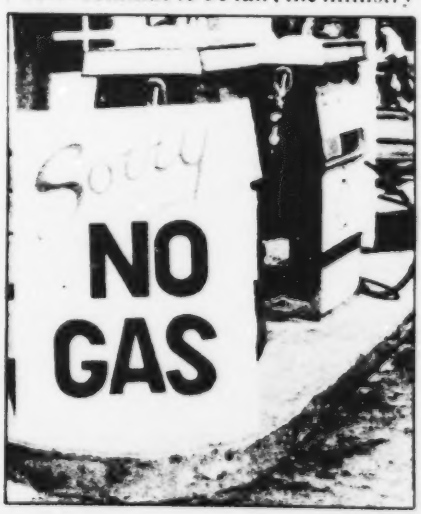
Securing reasonably priced energy for Ontario

Experience shows that escalating energy prices are costly—in terms of lost economic output, unemployment, inflation and erosion of Ontario industry's competitive advantage.

The ministry plays an important role in protecting the interests of Ontario consumers by ensuring that they pay fair prices for energy. This goal is achieved in several ways.

For example, ministry staff monitor natural gas retail prices. Cheaper natural gas in the U.S. places Ontario industries at a disadvantage —and can lead to fewer jobs in Ontario. So it's important to keep track of where prices are –and where they're headed.

To ensure that Ontario's energy costs continue to be fair, the ministry intervened in National Energy Board hearings on rate increases for both TransCanada Pipelines Ltd. and Trans Quebec and Maritimes Pipeline during 1984-85. The intervention had a direct impact in lessening the rate increases granted to both companies.



With sound energy planning and access to alternative fuel sources, signs like this one — which appeared at a Toronto gas station in 1981 — should be a thing of the past.

Competition in the marketplace helps keep gasoline prices reasonable. Independent gasoline retailers are an important component in maintaining a competitive market. Ministry surveys during 1984-85 indicated that as a group the independents maintained their market share in Ontario, and that this contributed to fair prices at the pumps.

Price wars among major gasoline retailers during 1984-85 also helped keep gasoline costs reasonable throughout the year. The price wars came about because of a reduced demand for petroleum products in Ontario—and retailers responded to this soft market by slashing prices.

Electricity is a very important component of the Ontario energy scene—and of the provincial economy. Each year, the ministry sets the terms of reference for the Ontario Energy Board's examination of proposed Ontario Hydro rate increases, and provides advice to the government after the Board reaches a decision.

Planning for the future

The oil supply interruptions of the 1970s proved the importance of planning for possible energy shortages. That kind of planning requires plenty of lead time.

The ministry works with the federal government and other agencies to minimize the adverse effects of possible shortages on consumers and on the whole economy. Ontario's contingency plan for oil shortages will be completed by April 1987.

During 1984-85, the ministry continued to participate in emergency supply planning, and prepared an "Energy Facts" brochure explaining the provincial government's work in contingency planning.

As well, a pilot project with four municipalities was undertaken, and three of the four municipal contingency plans were completed. Revised guidelines from the project are being

distributed to assist municipal contingency planning across Ontario.

Another important part of the ministry's role involves ensuring that Ontario's electricity system is planned and developed to promote energy security, economic growth and environmental protection.

During 1984-85, the ministry took a close look at the future of the province's electrical system—and found that several important issues must be addressed:

- the future demand for electricity;
- whether existing facilities can meet that demand;
- whether new facilities will be required;
- and how future demand can best be met in terms of financing and, social and environmental impact.

The findings were published in an information paper in February 1985, called *Planning the Electricity Supply System*.

Three other new publications on electricity appeared during 1984-85. They cover a range of topics including utility financing, local utility organization and the potential of electrical technologies.

The titles include *A Financial Overview of Ontario Hydro*, *The Municipal Electrical Utilities—Partners in Public Service*, and *The Electro-Technology Opportunity*.

These and many other energy information publications are available from the ministry's communication services branch.

Part of the ministry's planning efforts involve analyzing and forecasting Ontario's present and future energy requirements. This information is vital to maintaining secure supplies of energy for the province at reasonable cost.

During the fiscal year, ministry staff planned a major conference on the future of energy—to be held in Toronto in November 1985. Called "Energy 2000", the conference will focus on future energy issues affecting Ontario—including traditional forms of energy, such as oil, natural gas and electricity, and alternative fuels of the future.

Ontario Energy Board highlights

Because of rapid changes in the energy industry, regulatory bodies across the continent face a real challenge to stay relevant and effective.

The Ontario Energy Board regulates natural gas distributors in Ontario. The Board also conducts public hearings on proposed Ontario Hydro rate increases, and reports to the Minister of Energy on its findings.

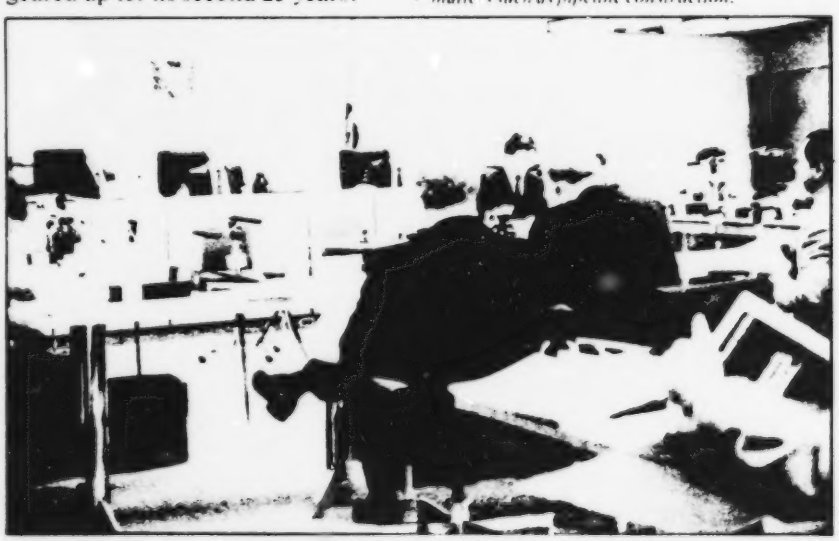
To ensure that it continues to be responsive to the needs of all of Ontario's energy users, the Board took several steps during 1984-85 to better position itself to deal with a rapidly-changing regulatory environment.

The year featured key organizational changes - including the appointment of a new Chairman, Robert W. Macaulay, in July 1984. As well, the Board's monitoring and surveillance of utilities were greatly improved by the addition of a new computer system and an improved reference library.

During the year, the Board addressed two generic issues that could have an important bearing on future energy regulation. One dealt with the change in ownership of a major gas utility, and the second involved awarding of costs to participants in the Board's public hearings process.

Fiscal 1984-85 was an active and important year for the Board - as it geared up for its second 25 years.

An Ontario Energy Board public hearing in Toronto. Public hearings help the Board regulate natural gas distributors, advise the Minister of Energy on proposed Ontario Hydro rate increases, as well as on other energy-related matters such as pipeline construction.



Working for a more energy-efficient Ontario

Over the past 10 years, the developed world has become much more energy-efficient, and governments and private industry have both played a large part in this achievement.

Between 1973 and 1983, Canada reduced the ratio of its total primary energy requirements to gross domestic product by more than six per cent—a significant achievement — and reduced the demand for oil over the same period by some 12 per cent.

But although the progress made to date is significant, Canada remains one of the most energy-intensive countries in the world—and Ontario is Canada's most energy-intensive province.

This underlines the importance of energy conservation and increased efficiency to Ontario's overall economic and social well-being.

The ministry has developed a number of programs aimed at improving energy efficiency and conservation across Ontario, and is also involved in assisting the development of new technologies that can provide energy from indigenous sources, reduce our dependence on oil as a transportation fuel and enhance energy efficiency of buildings and processes.

These programs and technologies serve a wide clientele—from individual homeowners and farmers, to large industrial concerns and firms that own huge office complexes. The programs contribute to making Ontario more energy-efficient and independent, and to increasing energy conservation across the entire spectrum of our society.

At this Toronto housing development, a construction worker adds insulation to a super-energy-efficient home that will help the homeowner heat the home for a quarter of the cost of a conventional house. Ministry programs geared to energy efficiency and conservation encourage development of new techniques and energy performance standards in the home building industry.

Teaching tomorrow's energy consumers

Dudley the Dragon strikes again!

The Conserving Kingdom — a ministry-sponsored play about the wise and efficient use of energy—once again won rave reviews from its young audiences (school children aged 8 to 12) at the 170 Ontario schools where it was performed during 1984-85.

Based on a fable of two mythical kingdoms - Saver City and Wasterville—the play comes with an energy kit guidebook for teachers, with fact sheets, activity cards and an energy quiz game, as well as take-home posters and energy stickers.

The play is constantly entertaining and features mime, puppets, singing and dancing—and a memorable cast of characters that includes Princess Penny Wise, King Kilojoule, the wasteful Prince Wantnot of Wasterville and, of course, Dudley, Wasterville's overworked dragon.

The play has become so popular that performances have already been booked well into 1985-86, and the ministry is developing a French version of the play for francophone children throughout Ontario.

Promoting energy education

Each year, ministry staff work closely with the Ontario Ministry of Education, school boards and teacher organizations across Ontario —to help students at all levels gain a greater awareness and understanding of the vital role energy plays in their daily lives.

As well, the ministry provides energy-related educational material to schools throughout Ontario. In 1984-85, five special posters and an accompanying teacher's guide were distributed to 600 secondary schools across the province.

The ministry also assisted in developing the first booklet of a five-part series on energy-related curriculum documents for high school teachers, *Energy in Society II: A Resource Guide for Teachers*. The booklet is called *Energy: A Way of Life*, and should be ready for distribution by the start of the 1985-86 school year.

In 1982, the ministry helped establish Energy Educators of Ontario (EEO) - a non-profit organization of some 900 primary and secondary school teachers and other educators. In February 1985, the group held its third annual energy conference for educators, "Fast Forward on Energy Education," in Kitchener-Waterloo.

Ontario school children love Dudley, star of a fairy-tale play sponsored by the ministry. Here, during a performance at a Toronto elementary school, Dudley gets advice from wise old King Kilojoule, the energy-conscious ruler of the Kingdom of Saver City.

Irene Cameron, an Ottawa teacher, and one of the founding members of Energy Educators of Ontario, conducts a teachers' workshop in Kitchener-Waterloo with materials developed as a result of attending ministry educational seminars.

The conference drew more than 200 participants, including delegates from four other provinces, the United States and South America.

Throughout 1984-85, Energy Educators of Ontario made significant progress toward increasing energy awareness in Ontario. During the year, the organization published three editions of its energy newsmagazine, *Energy Alert*, which reaches all 6,000 schools in Ontario. The EEO also completed and distributed the seventh of a series of teacher-written starter kits on energy.

Reducing governments' energy bill

Managing energy more wisely

Back in 1976, when the provincial government began a five-year energy management program in its own buildings, the target was to cut energy use by a modest 15 per cent. The program was so successful that it was extended another five years—and a new goal, which effectively raised the 10-year target to 26 per cent, was established.

By the end of the first nine years of the combined programs, a government-wide reduction in energy consumption of over 29 per cent was achieved — representing savings of close to $70-million. The government's total investment in energy management was $20.6-million.

Energy management programs in Ontario government buildings have saved taxpayers $70-million since 1976.

A 10-year program, established in 1976 to cut energy use in government buildings by 26 per cent, has helped decrease energy consumption by 29 per cent by the end of the program's ninth year.

Switching off the lights at night in this government office building offers tremendous energy savings each year.

Kicking the oil habit

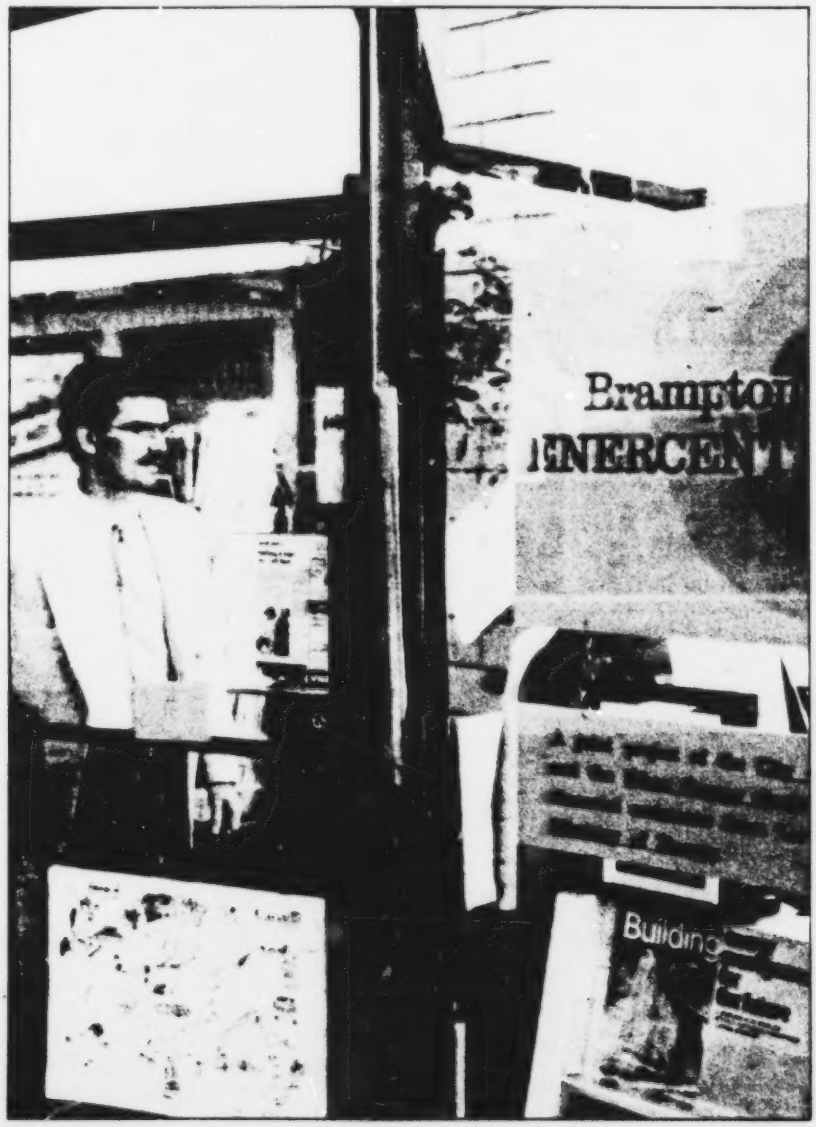
In 1980, the Ontario Government began a five-year program to get 338 of its own buildings off oil. By March 1985, 361 buildings had been converted to either natural gas or electricity from oil.

The government also initiated a five-year, $12-million program in 1981 for energy conservation efforts and off-oil conversions in institutional buildings—(e.g. schools, colleges, universities and hospitals etc.) —and municipal buildings across the province. The program's target was to displace 90 million litres of oil and save some $5-million annually.

In the program's first three years alone, institutional buildings across Ontario have displaced more than 65 million equivalent litres of oil and have saved nearly $7-million.

Providing high levels of service — while keeping energy costs down — is a problem faced by many municipalities across the province. To assist in the economical operation of this local arena, the municipality of Cambridge took advantage of the technological expertise available through ministry programs.

Municipalities across Ontario are assisted by a ministry program that provides trained energy auditors to help municipal governments keep their energy costs down.



Helping municipalities and local businesses cut costs

Across Ontario, municipal governments and local businesses face a familiar dilemma: limiting spending, while maintaining—or increasing—profitability or levels of service.

Many cities and towns have discovered that one sure-fire way to reduce their operating costs is by improving energy efficiency.

During 1984-85, the ministry helped Ontario's municipalities and businesses acquire enough energy expertise to get on top of their energy consumption and costs.

Adding up municipal energy costs

The municipal energy audit program—sponsored by the ministries of Municipal Affairs and Housing and Energy — provides trained energy auditors to help municipalities achieve their energy goals.

Energy auditors examine all a municipality's energy costs– heat for buildings, fuel for fleets, lights for streets, and so on. Then the auditors recommend the most effective ways of reducing costs.

In 1984-85, the program's 49 auditors found ways to reduce energy in more than 200 municipalities across Ontario.

Since the program began in 1981, more than 4,500 municipal buildings have been audited for energy use—and the auditors have helped make more than 600 of them more energy efficient. By the end of fiscal 1984-85, the program had led to estimated energy savings of more than $6-million.

Helping municipalities become more energy-efficient

Most municipal buildings in Ontario were not designed with energy efficiency in mind. Many still depend on oil for heating - resulting in high fuel costs for ratepayers.

But the ministry's municipal oil conversion and energy conservation program is helping Ontario's municipalities reduce their energy costs dramatically, by providing assistance for off-oil conversions and retrofitting.

In 1984-85, the ministry announced that the program would be extended for another three years, with up to $4.5-million in funding available. The expanded program will include conversion and retrofitting projects undertaken by conservation authorities in Ontario, as well as solar heating installations for seasonal municipal swimming pools.

Since 1982, more than 325 municipalities have taken advantage of the program, and a total of 1,200 oil conversions and retrofit projects have been started. The total annual energy savings as a result of the 780 projects completed by March 31, 1985, exceeded $3.2-million - and the projects have displaced more than 18 million litres of oil.

Documenting energy successes

Since 1979, the City of Mississauga has saved over $1.4-million in energy costs, and the city expects to save at least another $1-million within the next six years. How did they do it?

The city initiated an extensive energy management program that includes monitoring the energy consumption of more than 200 municipally-owned buildings, facilities and vehicles, and implementing many energy-saving measures.

Mississauga's successful approach to energy conservation is outlined in one of six municipal energy savings case studies produced during 1984-85 by the ministry. Others were produced on Brantford, Nepean, Owen Sound, Whitby-Durham and Arnprior.

The six case studies complement two films produced by the ministry in 1984-85 especially for municipalities: *Energy Management — It's Good Business*; and *The Energy Auditor: Source and Resource*.

The case studies and both films are available from the ministry's communication services branch.

Tailoring energy advice for the community

Ontario's municipalities can now order custom-made energy seminars — thanks to a project introduced in 1984-85 by the ministry and the Association of Municipalities of Ontario (AMO).

The ministry's municipal oil conversion and energy conservation program provides funding to assist in converting to alternative energy sources. This Kincardine swimming pool is heated by solar energy.

The ministry keeps on top of the many kinds of energy information available, and the Association knows what kinds different municipalities want. As a result, the ministry and AMO can now tailor energy seminars for specific municipalities with appropriate speakers, films and other resource materials.

During the 1984-85 fiscal year, the City of Nepean—which uses a computer to monitor and control energy use in its buildings—hosted a seminar on the latest in high-tech energy management.

Cambridge and Windsor, on the other hand, wanted to know about simple low-cost and no-cost energy-saving measures. Seminars were developed and offered to suit the needs of both municipalities in 1984-85.

Custom-tailored energy management seminars like this one in the city of Nepean are available to municipalities from the ministry and the Association of Municipalities of Ontario.

Reducing energy costs in religious buildings

At hundreds of religious buildings across Ontario, energy costs are dropping, thanks to a ministry program that advises congregations how to save energy.

Since the program began in 1981, over 1,200 congregations in Ontario have participated, and some 350 congregations have appointed special energy co-ordinators to keep on top of energy bills and introduce the latest energy-saving techniques.

Many of the participating religious institutions get together and share their experiences at ministry-sponsored forums and workshops held throughout Ontario each year.

In 1984-85, more than 2,500 people attended ecumenical energy seminars in nine communities: Thunder Bay, North Bay, New Liskeard, Sudbury, Ottawa, Peterborough, Toronto, London and Windsor.

During the year, the ministry also conducted energy audits in 95 religious buildings, and produced and distributed a special poster to help church groups identify energy-saving opportunities.

Cutting downtown energy expenses

Ontario's commercial centres feature large, impressive buildings, and energy bills in these downtown office towers are just as high.

Shutting off lights in the evening, installing more energy-efficient lighting, and adjusting thermostats and other mechanical systems may not seem like exotic conservation measures, but they can result in tremendous savings with very short payback periods.

Since 1978, hundreds of companies in Ottawa and Toronto have taken part in a ministry program to promote volunteer corporate participation in energy management.

During 1984-85, some 57 firms—representing 3.6 million square metres of office space in 121 buildings in Ottawa and Toronto—reported savings of more than $10-million annually. As well, the City of London also joined the program during the fiscal year.

Religious institutions across the province are reducing energy costs through a ministry program that provides ecumenical energy seminars and energy audits. Shown is Trinity Anglican Church, Colborne, one of the churches involved in the program.

Large downtown commercial buildings and office blocks can realize dramatic savings by turning off lights during non-operating hours.

Energy management programs designed for large commercial complexes are saving Ontario building managers hundreds of thousands of dollars every year.

Putting municipal waste to work

Municipal waste disposal — and the waste's potential for generating energy—have led to increased interest in municipal energy from waste plants. In 1984-85, the ministry was involved in a variety of municipal energy from waste projects.

London's Victoria Hospital, for example, will be the site of Canada's first plant to cogenerate electricity, steam and hot water from municipal garbage. The facility will cost approximately $30-million, and will receive close to $13-million from Ontario and the federal government.

With completion of the project scheduled for early 1987, the new plant will be able to consume up to one-third of London's municipal solid waste — significantly reducing the city's landfill needs. The plant will also greatly reduce the hospital's reliance on outside energy sources for heating and lighting.

In response to local environmental concerns, the facility will be equipped with the latest in pollution control equipment, and is designed to operate at extremely high temperatures to ensure complete combustion.

Small hydro facilities have the potential to help Ontario municipalities and conservation authorities increase energy self-sufficiency. This small hydro project at the Fanshawe Dam near London was assisted by the ministry

The project was Ontario's first energy from waste plant to undergo a thorough assessment before the Consolidated Hearing Board. Besides providing $5-million in capital assistance for the project, the ministry also contributed $1.2-million to the cost of the public hearing.

In another project, the ministry provided assistance to the Town of Orangeville, which refurbished its water pollution control plant during 1984-85. The improved facility allows the town to treat its sewage and to power the plant and supply heat to a local school.

Methane gas, produced as a by-product of the sewage treatment process, is used as a fuel for the engine-generator—which in turn provides about 50 per cent of the plant's normal power needs and 100 per cent of its space heating requirements.

Surplus heat from the plant is sold to a nearby school — producing an annual revenue of $10,000 for the Town. Nearby businesses have also indicated an interest in buying energy from the plant, which is expected to save Orangeville about $70,000 annually in electricity and heating costs.

Energy from waste plants can provide many public benefits and create economic opportunites for the private sector.

At the end of the 1984-85 fiscal year, three private sector proposals were being developed to build plants to manufacture energy from municipal waste. As well, industry interest in energy from waste grew during 1984-85, with several companies considering the development of plants to make constructive use of industrial waste.

Helping local governments develop hydro resources

The Fanshawe Dam small hydro facility, a demonstration project assisted by the ministry, was officially opened in September 1984. The project illustrates how municipalities or conservation authorities can use an existing dam site to generate power for their own needs.

The Upper Thames River Conservation Authority wanted to use the excess power generated by the Fan-

shawe Dam at other nearby facilities. A unique wheeling agreement with Ontario Hydro, that is now serving as the model for similar projects, enabled the authority to transport its surplus electricity over Ontario Hydro lines for use at other facilities. Ontario Hydro also supplied the meters for this and other installations at no cost to the project developers.

Since 1980, a generating capacity of almost 4,000 kW has been created through small hydro projects in Ontario. Private sources accounted for 85 per cent of the funding for these projects.

In 1984-85, the ministry assisted a total of 18 municipalities to conduct feasibility studies for new small hydro developments. The total potential investment for developing the feasible sites is $20-million.

Developing energy-efficient transportation

Cutting the costs of public transit

Public transit is growing in Ontario—and it's a growing expense for Ontario's municipalities. One way to reduce the cost of public transportation is by converting buses to run on propane, instead of diesel fuel.

To prove that propane is a sensible option for transit authorities across the province, the ministry initiated a propane bus demonstration in Ottawa in 1984-85. During the project, 15 OC-Transpo buses will be converted to run on propane, with funding assistance from the ministry and the federal government.

OC-Transpo expects fuel costs for the buses to drop by about 20 per cent —or about $4,500 per bus during an active service year—representing an annual diesel fuel displacement of 40,000-50,000 litres per bus.

As well, five City of Hamilton buses were converted from diesel to natural gas in 1984-85 with ministry assistance.

Buses are well-suited to natural gas conversion, because the large amount of space below the floor can easily accommodate the extra tanks needed. The tanks add weight, but natural gas is considerably lighter than diesel fuel, so the net additional weight is minimal.

The buses are currently filling up at a Union Gas compressor in Hamilton, and the project was co-funded by the ministry and the federal government.

Photo courtesy of OC-Transpo

This OC-Transpo bus is one of 15 Ottawa buses converted to propane under a ministry-assisted conversion program.

Each year, Ontario's truckers learn fuel-efficient driving techniques by participating in the ministry's TruckSave Fuel Economy Challenge. The September 1984 Challenge drew 250 entrants, among them Diane Robinson of Bowmanville, the lone female challenger, who is shown here with her rig.

Saving money by driving wisely

Ontario's great distances — and extensive network of roads and highways – add up to a lot of driving, and high fuel costs.

If today's student drivers are trained to save energy, Ontario will soon have a whole new generation of conservation-conscious motorists on the road. That's the idea behind including driving instructors in the ministry's DriveSave program.

In 1984, some 50 Ontario driving instructors — representing a total of more then 30,000 students—attended a half-day DriveSave seminar on fuel-saving driving techniques. The ministry is counting on them to pass these energy-saving tips on to their students.

The instructors learned that driving 100 km/hr instead of 110 km/hr can reduce fuel costs by up to 10 per cent. They learned that accelerating gently — both for safety and energy savings — is a good idea, too. And they learned that idling a car for just 10 seconds uses more fuel than switching it off and re-starting it.

During 1984-85, the ministry offered 11 DriveSave seminars for fleet managers and professional drivers across the province, and almost 200 people attended.

Challenging Ontario's truckers to be energy-wise

Fuel costs represent a major operating expense for Ontario's trucking industry, but fuel-efficient driving techniques can help reduce these costs — as the ministry's TruckSave Fuel Economy Challenge has shown.

In September 1984, truckers from across Ontario participated in this popular competition for the third year in a row. Close to 250 entrants – more than double the number from the previous year — competed for $13,000 in prizes donated by industries involved in trucking. The competition is designed to increase the productivity of the industry by making it more energy-efficient.

The competing truckers drove along one of three city-to-city routes in Ontario — getting their tanks topped up at the beginning and the end of the routes, and stopping at checkpoints along the way to have their vehicle weights recorded. Keeping their speed down, and braking and accelerating gently were just some of the ways they reduced their fuel consumption.

Filling up with tomorrow's fuels — today

Alternate transportation fuels — or ATFs — include gases such as propane, natural gas and methanol. During 1984-85, these fuels grew increasingly popular in Ontario.

There are currently about 60,000 propane-powered vehicles in Ontario, cars and trucks that currently use gasoline engines that have been converted to run on propane.

Message de l'Honorable Vincent G. Kerrio Ministre de l'Énergie

VINCENT G. KERRIO
Ministre

Ce rapport est un bilan des activités du ministère pour l'année financière 1984-1985.

La question qui se pose sur l'énergie en 1985 est infiniment différente de celle suscitée au début des années 1970. A l'époque, le gouvernement ontarien avait été amené à créer un ministère de l'Énergie pour résoudre le problème international de la montée vertigineuse des prix de pétrole. Aujourd'hui, la plupart des ontariens seraient probablement de l'avis qu'ils n'ont plus à se soucier d'une "crise" de l'énergie.

Au cours des dix dernières années, l'Ontario a connu un succès considérable dans le domaine de la conservation de l'énergie ainsi que dans le développement de nouvelles technologies visant l'efficacité énergétique.

Cependant, un rapport publié en 1984 par l'Organisation de la coopération et du développement économiques, par l'intermédiaire de son bureau international de l'énergie, indiquait que le Canada est le des plus gros consommateur d'énergie. Son taux de consommation dépasse même celui des États-Unies, de la Suisse, de l'Allemagne de l'Ouest, du Japon, de la France et de l'Italie. De grands progrès ont été fait, mais il y a encore beaucoup à faire.

Le ministère prévoit que la croissance économique de la province entraînera une consommation d'énergie encore plus élevée qu'elle ne l'est aujourd'hui. L'Ontario doit alors maintenir un rôle actif dans le développement de nouveaux programmes et de politiques qui viseront à promouvoir la conservation de l'énergie et à améliorer l'efficacité énergétique.

Vincent G. Kerrio

VINCENT G. KERRIO
Ministre de l'Énergie

DUNCAN ALLAN
Sous-ministre

Message du sous-ministre

L'exercice financier 1984-1985 a été une année de grands changements au ministère de l'Énergie.

Suite à un examen minutieux de notre mandat et de nos programmes, nous avons effectué une réorganisation complète du ministère. Nous sommes maintenant moins nombreux, plus forts, et mieux placés pour répondre aux besoins de l'Ontario dans un monde où le domaine de l'énergie change rapidement.

Ce rapport annuel souligne la poussée de nos principales politiques ainsi que les points saillants d'une grande diversité d'activités qui vise une utilisation plus sage et plus efficace de l'énergie en Ontario. En outre, le rapport met en relief le redoublement des efforts du ministère à employer les ressources publiques afin d'assurer l'auto-suffisance énergétique de l'Ontario.

DUNCAN ALLAN
Sous-ministre

Faire face au problème de l'énergie

Le ministère de l'Énergie représente l'Ontario pour tout ce qui a trait à l'énergie. Pour remplir son mandat, le ministère a créé des politiques et des programmes axés sur cinq thèmes principaux:

- Premièrement, le ministère prend une part active aux négociations sur la fixation des prix entre les provinces productrices et le gouvernement fédéral *afin que les prix de l'énergie en Ontario demeurent raisonnables.*
- Deuxièmement, le ministère appuie le développement de nouvelles sources d'énergie, qu'elles soient classiques ou renouvelables.
- Troisièmement, le ministère prône les *économies d'énergie,* surtout en faisant appel aux technologies nouvelles.
- Quatrièmement, le ministère encourage le *remplacement* du pétrole par des sources d'énergie plus abondantes.
- Cinquièmement, le ministère aide l'Ontario à produire sa propre énergie, tant en favorisant le développement de sources énergétiques que celui de la technologie.

Comprendre le problème de l'énergie

L'Ontario doit envisager le problème de l'énergie non seulement sous l'angle national, mais aussi sous l'angle international. L'Ontario est le plus gros consommateur d'énergie du Canada. Nous utilisons le tiers de la consommation nationale et la plus grande partie de cette énergie est produite hors de la province.

Le ministère de l'Énergie s'efforce de parvenir à une utilisation plus efficace de l'énergie en Ontario, en prônant la création de sources d'énergie dans la province même, et en tentant d'influencer l'offre et la fixation des prix de l'énergie en provenance de l'extérieur, le gaz naturel et le pétrole surtout.

Dans le domaine de l'énergie, les tendances dominantes en 1984-1985 ont été un maintien de la faiblesse des marchés mondiaux du pétrole, l'intensification de la concurrence sur les marchés de l'énergie aux États-Unis et l'abandon de la politique énergétique nationale par le gouvernement fédéral.

Assurer l'approvisionnement de l'Ontario en pétrole à des prix raisonnables

En mars 1985, le gouvernement fédéral et les provinces de l'Ouest ont conclu un accord sur la fiscalité et le prix du gaz naturel et du pétrole. Le prix du pétrole brut devait être libre à compter du 1er juin, date à laquelle les taxes fédérales spéciales devaient être supprimées. Les impôts sur le revenu provenant du pétrole et du gaz naturel et les versements destinés à encourager l'exploitation des puits de pétrole seront graduellement supprimés au cours des prochaines années. La question des modifications portant sur le prix du gaz naturel devrait être résolue d'ici novembre 1985.

Le ministère travaille en liaison très étroite avec l'industrie pétrolière de l'Ontario pour faire en sorte que les consommateurs payent un prix équitable pour l'énergie. Bien que les réserves en pétrole de l'Ontario soient restreintes comparées à celles des provinces de l'Ouest, les incitations gouvernementales encouragent l'activité de l'industrie pour protéger les emplois des travailleurs de l'industrie pétrolière, comme ceux-ci qui travaillent à un puits de forage en Ontario.

Pour encourager davantage l'industrie, le gouvernement fédéral a résolu les différends qui l'opposaient à Terre-Neuve au sujet du projet Hibernia.

Lors d'audiences du Conseil national de l'énergie tenues en 1984-1985, le ministère a fait connaître le point de vue de l'Ontario au sujet des tarifs demandés par les principales compagnies de distribution de gaz naturel exploitant des gazoducs à l'est de l'Alberta. Ces interventions ont eu un effet direct sur les prix que doivent payer les consommateurs ontariens de gaz naturel.

Se préparer pour l'avenir

Le ministère a également prévu des mesures en cas d'interruption future des approvisionnements en énergie. La mise au point des plans d'urgence pour la province en cas d'interruption des livraisons de pétrole a été à moitié achevée au cours de l'exercice 1984-1985. Dans l'intervalle, on a créé un plan provisoire en cours d'année afin de minimiser les inconvénients résultant d'une interruption éventuelle des approvisionnements survenant avant que les plans définitifs de l'Ontario soient au point.

Au cours de 1984-1985, le ministère a également procédé à une étude aprofondie du réseau électrique de la province et en a conclu que d'importantes questions restaient à résoudre:
- quelle sera l'importance de la demande future d'électricité?
- les centrales existantes pourront-elles satisfaire cette demande?
- faudra-t-il construire de nouvelles centrales?
- comment satisfaire au mieux la demande future en termes de financement et d'effets sociaux et environnementaux?

Former les consommateurs d'énergie de l'avenir

Le Royaume de la conservation, une pièce de théâtre commanditée par le ministère sur l'utilisation sage et efficace de l'énergie, a encore une fois provoqué l'enthousiasme des jeunes spectateurs (enfants de 8 à 12 ans) dans les 170 écoles de l'Ontario où elle a été présentée en 1984-1985.

La pièce connaît un tel succès qu'elle est déjà très demandée pour 1985-1986 et que le ministère prépare actuellement une adaptation française qui sera présentée aux élèves francophones de la province.

Le ministère a également fourni du matériel pédagogique sur l'énergie aux écoles de toute la province. En 1984-1985, cinq affiches spéciales et un guided'enseignant s'y rapportant ont été distribués à 600 écoles secondaires de l'Ontario.

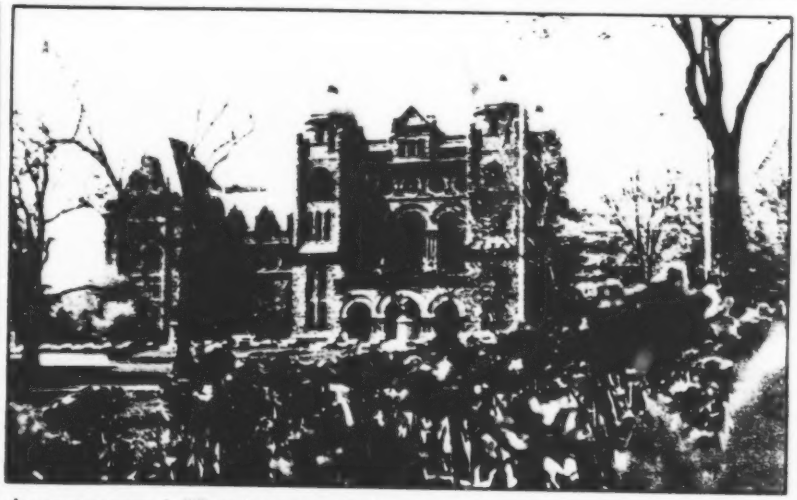
L'association à but non lucratif "Energy Educators of Ontario", qui regroupe quelque 900 enseignants des écoles primaires et secondaires et d'autres éducateurs, a tenu sa troisième réunion annuelle en février 1985 sur le thème: "Tout faire pour éduquer les jeunes sur l'énergie".

Au cours de l'année, l'association a publié trois éditions de son magazine sur l'énergie, *Energy Alert,* qui est diffusé aux 6 000 écoles ontariennes, et achevé la préparation de sa septième trousse pédagogique sur l'énergie, rédigée par des enseignants.

On n'est jamais trop jeune pour apprendre à économiser l'énergie. Ici, Dudley le Dragon et le prince Wantmot de Wasterville, deux personnages de la pièce Le royaume de l'économie, *transmettent un message important aux spectateurs, tout en les amusant.*

Reduire les frais d'énergie en Ontario

En 1980, le gouvernement de l'Ontario a entrepris un programme quinquennal destiné à convertir 338 de ses édifices afin qu'ils utilisent une autre source d'énergie que le pétrole. Dès janvier 1985, près de 400 édifices avaient été convertis pour utiliser soit le gaz naturel, soit l'électricité. Fin 1984, le programme gouvernemental de gestion de l'énergie entrepris en 1976 avait réduit la consommation d'énergie d'environ 29 pour cent, ce qui représente une économie de près de 70 millions de dollars.



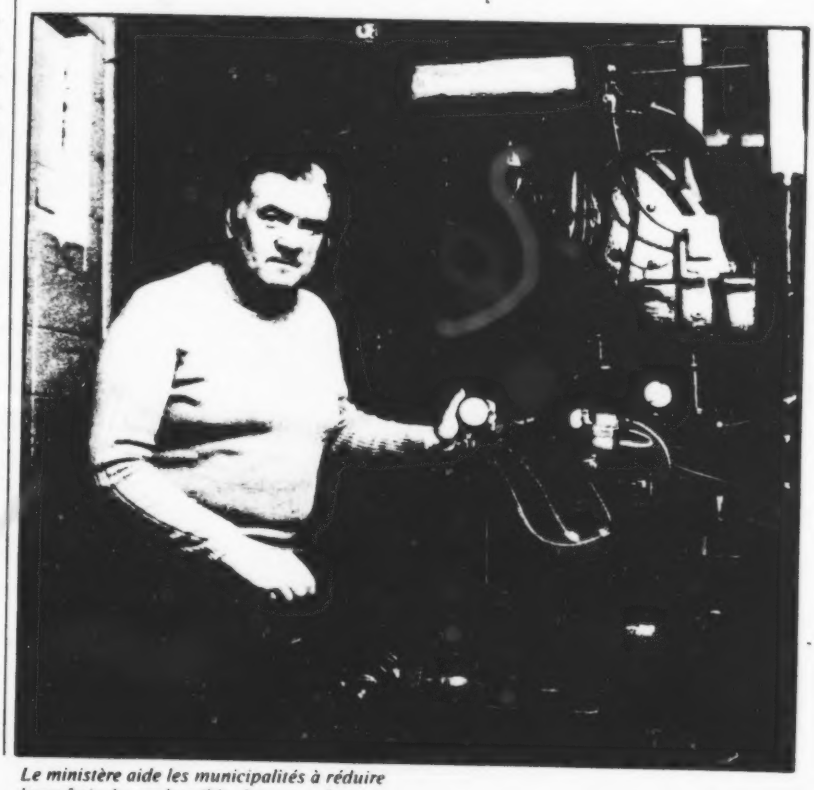
Le gouvernement de l'Ontario est convaincu que les économies d'énergie commencent chez soi! Depuis 1976, date à laquelle le programme d'économies d'énergie fut lancé à l'échelle gouvernementale, 361 édifices gouvernementaux ont été adaptés pour aider à réduire les frais d'énergie.

Aider les municipalités et les entreprises locales à réduire leurs dépenses d'énergie

En 1984-1985, plus de 200 municipalités ontariennes se sont prévalues du programme de vérification énergétique parrainé par le ministère des Affaires municipales et par celui du Logement et de l'Énergie.

Les 49 vérificateurs qu'emploie le programme étudient ce que le chauffage, le carburant des véhicules et l'éclairage urbain coûtent à une municipalité. Depuis le début du programme, en 1981, on a ainsi pu réduire les dépenses municipales pour l'énergie de plus de six millions de dollars.

En 1984-1985, le ministère a lancé un nouveau programme en collaboration avec l'Association des municipalités de l'Ontario grâce auquel les municipalités peuvent dorénavant demander des ateliers sur l'énergie spécialement adaptés à leur situation et couvrant des sujets tels que la gestion de l'énergie par la technologie de pointe et les mesures simples et peu coûteuses, voire gratuites, permettant d'économiser l'énergie.



Le ministère aide les municipalités à réduire leurs frais de combustible. Ici, un technicien surveille un brûleur de conversion à gaz à l'aréna George Bell de Toronto.

Utilisation des déchets municipaux

Les déchets municipaux, et leur vaste potentiel énergétique, ont suscité un grand intérêt pour les centrales municipales chauffées aux déchets. Le ministère a subventionné divers projets au cours de l'exercice 1984-1985.

L'hôpital Victoria, à London, construit actuellement une centrale de 30 millions de dollars et qui sera la première usine canadienne à produire de l'électricité, de la vapeur et de l'eau chaude en brûlant les déchets municipaux et qui rendra l'hôpital beaucoup moins tributaire des sources extérieures pour le chauffage et l'éclairage.

De même, la municipalité d'Orangeville a inauguré, en 1984-1985, une nouvelle usine de contrôle de la pollution des eaux qui produit du méthane à partir des eaux usées. Ce gaz sert à produire de l'électricité et à chauffer les bâtiments. La chaleur excédentaire est vendue à l'école locale et elle pourrait aussi être vendue à des entreprises voisines.

Accroître le rendement énergétique des transports urbains

Pour faire face à la hausse des coûts des transports urbains, le ministère a entrepris, en 1984-1985, un programme de démonstration d'autobus au propane, à Ottawa. Dans le cadre de ce projet, 15 autobus d'OC Transpo seront convertis au propane grâce à une subvention du ministère et d'Énergie, Mines et Ressources Canada. On prévoit que les frais de carburant pour ces autobus baisseront d'environ 20 pour cent, soit 4 500 $ par véhicule et par année d'exploitation.

Conduire économiquement

Bientôt, grâce au programme DriveSave du ministère, une toute nouvelle génération de conducteurs circulera sur les routes de l'Ontario. En 1984, quelque 50 moniteurs de conduite ontariens, qui ont enseigné la conduite à plus de 30 000 élèves, ont assisté à un atelier DriveSave d'une demi-journée sur les techniques de conduite économique.

Ces moniteurs peuvent maintenant donner des conseils à leurs élèves. Par exemple, ils leur apprendront qu'en roulant à 100 km/h au lieu de 110 km/h, on peut réduire les frais de carburant jusqu'à 10 pour cent, et qu'il faut plus d'énergie pour tourner au ralenti pendant 10 secondes que pour redémarrer le moteur.

Utiliser plus efficacement l'énergie dans nos maisons

En Ontario, bien des maisons ont des fenêtres qui ne sont pas calfeutrées et qui laissent passer les courants d'air, dont les robinets d'eau chaude fuient, dont la fournaise est vieille et d'un mauvais rendement et dont les toits et le sous-sol ne sont pas isolés. Pour savoir comment économiser l'énergie, adressez-vous à Épargne-chaleur, le programme consultatif du ministère.

Depuis les débuts de ce programme, en 1980, plus de 150 000 propriétaires ontariens ont profité des conseils pratiques que leur ont offert les ateliers Épargne-chaleur. Les conseils utiles sont si divers, allant des consultations personnelles aux expositions en passant par les bandes magnétiques, les échantillons de produits, les brochures sur l'énergie et autres renseignements, que les propriétaires sont sûrs d'y trouver ce dont ils ont besoin.

On prévoit que le programme de conversion de 15 autobus de OC-Transpo, subventionné par le ministère, permettra d'économiser 67 500 $ de carburant par an.

Avec la gracieuseté d'OC Transpo

En 1984-1985, le ministère a lancé Épargne-chaleur Nord afin de faire profiter les communautés du Nord ayant moins de 9 000 habitants des mêmes conseils de spécialistes. Les ateliers ont connu un vif succès puisque certains ont attiré jusqu'à 80 pour cent des propriétaires locaux.

Construire les maisons de demain–aujourd'hui

L'isolation des maisons R-2000 est très poussée. Ces résidences sont construites avec un soin tout particulier pour réduire les frais de chauffage jusqu'à 75 pour cent. En 1984-1985, dans le cadre du programme de démonstration de construction de maisons économiques parrainé par le ministère, 21 constructeurs ontariens ont construit 72 maisons R-2000 dans 25 communautés de l'Ontario.

On a entrepris, au cours de ce même exercice, un projet de démonstration dans la communauté éloignée d'Armstrong, à 250 kilomètres de North Bay. Cette démonstration comprenait l'aménagement de logements existants pour améliorer l'utilisation de l'énergie et la construction de nouvelles résidences ayant un meilleur rendement énergétique.

Aider l'industrie ontarienne à mieux utiliser l'énergie

En 1984-1985, le ministère a participé au développement de technologies destinées à améliorer l'utilisation de l'énergie par l'industrie ontarienne et à rendre la province plus compétitive.

Ogilvie Mills Ltd. fait désormais appel à un système anaérobique de traitement des déchets à son usine de production d'amidon et de gluten de blé de Thunder Bay pour produire du méthane qui sert de combustible dans les procédés de fabrication. Cette installation a été subventionnée par les gouvernements fédéral et provincial.

On construit également, à Chapleau, une centrale mixte de 10 millions de dollars qui convertira plus de 100 000 tonnes de déchets de bois en 45 millions de kilowatts d'électricité par an. Hydro Ontario a accepté d'acheter toute l'électricité produite à des tarifs nouveaux et avantageux.

Les ateliers Epargne-chaleur organisés par le ministère, comme celui qui se déroule ici dans un centre d'achats d'Ottawa, informe les propriétaires sur la façon de réduire leurs frais de chauffage domestique. Le personnel du programme est là pour répondre aux questions des consommateurs et leur donner des conseils sur les économies d'énergie.

Les maison R-2000 économisent l'énergie au maximum et permettent à leurs propriétaires de dépenser jusqu'à 75 % de moins en frais d'énergie que ceux habitant une maison classique.

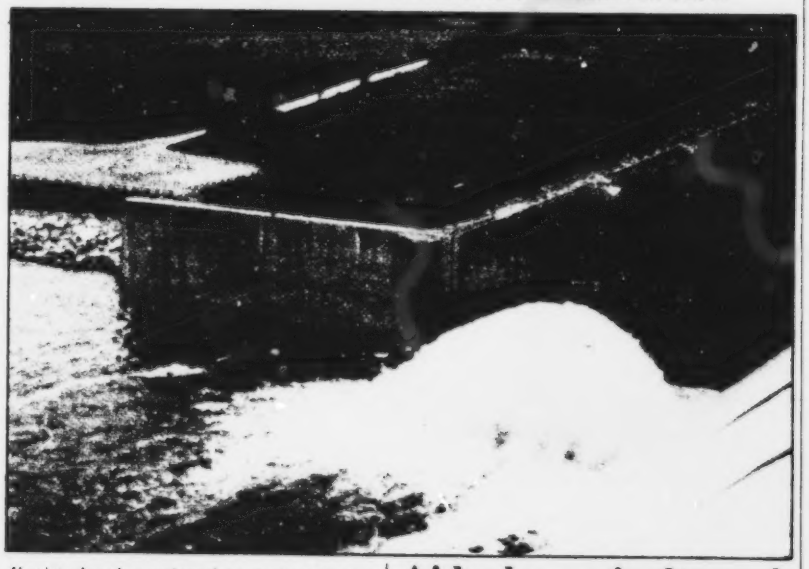
Exploiter davantage le potentiel des petites centrales

La petite centrale hydro-électrique du barrage Fanshawe, projet de démonstration subventionné par le ministère, a été officiellement inaugurée en septembre 1984. Elle permet à l'office de protection de la nature d'Upper Thames River de subvenir à ses propres besoins en électricité au barrage comme dans les installations voisines.

Des dispositions de transport rotatif prises avec Hydro Ontario, qui serviront de modèle pour des projets similaires, permettent à l'office de

protection de la nature d'utiliser les lignes d'Hydro Ontario pour acheminer l'électricité excédentaire vers d'autres installations.

L'Ontario est à la pointe du progrès en ce qui concerne les petites centrales. Cette industrie ontarienne en pleine croissance produit déjà la plupart des exportations canadiennes dans ce domaine, soit un total de 14 millions de dollars en 1984.



Il existe dans la province des centaines de sites qui se prêtent à merveille à l'installation de petites centrales hydro-électriques. Au barrage Fanshawe, à London, le ministère a subventionné un projet de petite centrale qui permet à l'office de protection de la nature d'Upper Thames River de produire elle-même son électricité.

Aider les agriculteurs à économiser l'énergie

Le ministère commandite quelque 60 projets de recherche et de démonstration destinés à trouver de nouvelles technologies pour mieux utiliser l'énergie à la ferme. En novembre 1984, le ministère a lancé un programme d'aménagement des séchoirs de céréales qui subventionne les exploitants de séchoirs commerciaux pour les aider à faire face aux coûts d'installation de systèmes de commande automatiques, ce qui leur permettra de réduire leur consommation d'énergie sans nuire à la qualité du grain.

Créer le moteur automobile de l'avenir

En 1984-1985, le ministère a continué à jouer un grand rôle dans la mise au point de nouveaux moteurs et de carburants de remplacement qui soient à la fois compatibles et économiques.

Actuellement, 60 000 véhicules au propane, des voitures de tourisme et des camions dont le moteur à essence a été converti pour fonctionner au propane, sillonnent les routes de l'Ontario.

En cours d'exercice, Chrysler Canada a commencé à étudier un moteur contruit spécialement pour fonctionner au propane. Le ministère subventionne ce projet qui devrait produire un moteur plus économique, plus fiable et d'un meilleur rendement que les moteurs au propane utilisés actuellement.

Le ministère subventionne également des recherches portant sur d'autres carburants de remplacement pour les transports, comme le gaz naturel et le méthanol.

Trouver des énergies de remplacement pour l'Ontario

L'Ontario est tout particulièrement bien placé pour mettre au point les technologies basées sur l'électricité, parce que nous disposons de ressources électriques abondantes et bon marché. Parmi les études de faisabilité et les projets de démonstration, mentionnons l'étude de l'emploi à l'échelle commerciale de la technologie de la soudure au plasma dans l'industrie sidérurgique, et les études de micro-ondes, des lasers, du chauffage aux infrarouges, du traitement aux ultraviolets, des entraînements à vitesse variable, des faisceaux d'électrons et des membranes.

Les recherches entreprises en Ontario sur l'énergie provenant de la fusion pourraient rapporter gros à l'avenir; l'humanité disposera peut-être un jour d'une source d'énergie pratiquement inépuisable.

Les chercheurs qui travaillent dans le domaine de la fusion essayent de reproduire en toute sécurité le processus de la combinaison des atomes qui se produit dans le soleil et qui dégage une quantité énorme d'énergie. L'expérience acquise par l'Ontario en technologie de fission nucléaire nous permet de jouer un rôle important dans ces recherches.

In fact, propane has now displaced more than 1.5 per cent of Ontario's gasoline consumption — mainly because of attractive tax incentives that generate fuel cost savings of up to 40 per cent. In Ontario, there is no retail sales tax on propane-powered vehicles or conversion equipment, nor is there a road-fuel tax on propane.

Natural gas, which is much cheaper than gasoline, has been used for many years as a transportation fuel in European countries. It has proven to be safe and reliable, and—a big plus for Ontario drivers—natural gas vehicles start easily in cold weather.

In fact, it's possible that Ontario's car owners may one day be able to fill up their tanks with natural gas—right in their own garages.

To meet the octane requirements of modern engines—and to keep pace with environmental standards resulting in the phase-down of lead as an additive in gasoline—the petroleum industry has started looking closely at the potential of adding methanol to gasoline.

In fact, methanol has been sold commercially in Germany and the U.S. for several years, and during 1984-85 plans were made to introduce methanol as a low-level, co-solvent blend in gasoline at 17 V-Plus stations in southern Ontario.

The growing number of propane and natural gas-powered vehicles on the road today proves that these fuels are viable alternatives to gasoline. Here, a propane-fuelled van gets a fill-up in Toronto.

Many of Ontario's fleet operators are finding that they can cut fuel costs considerably by converting from gasoline or diesel to natural gas-powered vehicles.

Making our homes more efficient

Diagnosing energy losses

Many homes in Ontario suffer from energy pests—areas inside the house that contribute to heat loss and lead to higher energy bills.

These energy pests come in many shapes and sizes—uncaulked, drafty windows, dripping hot water taps, worn-out, inefficient furnaces, uninsulated roofs and basements — but they all have one annoying habit in common: They "eat" money.

If your home suffers from energy pests, it's nice to know you can get help from the Ministry of Energy, through an energy advisory program known as HeatSave.

Since the program began in 1980, more than 150,000 homeowners in 50 Ontario communities have benefited from the practical, personal advice provided at the ministry's HeatSave clinics. The clinics are designed to advise local residents on how to reduce their home energy costs and improve their comfort at the same time.

HeatSave clinics use the most modern methods available to help locate and solve homeowners' energy problems. Using infra-red imagery to illustrate areas of heat loss within local homes, HeatSave technicians can help homeowners discover the most cost-effective actions they can take to save on energy.

At the clinics, locally-trained staff calculate each home's energy efficiency rating, based on the homeowner's estimates of the number of square metres of heated floor area, and on the home heating and hydro costs for the previous year.

The efficiency rating provides a good preliminary assessment of the existing condition of the house - and of the homeowner's energy habits. The advisors and homeowners can then sit down and discuss energy-related problems, concerns and solutions.

Homeowners enjoy the personalized attention they receive at the clinics. The wide variety of helpful services - including individual consultations, displays, videotapes, product samples, energy-related brochures, pamphlets and other information—guarantees that home owners receive the advice they need.

The ministry's HeatSave Clinics bring technical advice on energy efficiency right to the neighbourhood — as demonstrated by this one, held in an Oakville shopping mall.

Reaching out to northern residents

The colder it gets, the more people stand to spend on energy for heating their homes. In northern Ontario—where it gets very cold indeed—controlling heat loss is particularly important to homeowners.

In 1984-85, the ministry introduced HeatSave North, to bring energy-saving advice to northern communities with fewer than 9,000 residents. The program is co-funded by the ministries of Energy and Northern Affairs.

During the year, HeatSave North clinics were held in New Liskeard, Haileybury, Cobalt, Latchford, Englehart-Charlton, Temagami, Fort Frances and Rainy River. The clinics were very successful - often attracting as many as 80 per cent of the homeowners in an area.

Building tomorrow's homes—today

Imagine a virtually dust—and draft-free house. A house that doesn't cost an arm and a leg to heat, with a bright, sunny interior. A house so well-insulated you can barely hear the sound of passing cars.

It sounds like the house of the future, but you can live in it today. Low-energy new homes are already popular in Ontario, and their popularity is growing.

During 1984-85, more than 20 Ontario builders were involved in the construction of 72 low-energy, R-2000 houses in 25 communities across the province, under the ministry's affordable low-energy new housing demonstration program.

A related program—funded by the ministry and administered by the Canadian Home Builders' Association—trains builders in the special techniques and care needed to construct R-2000 low-energy new homes.

The R-2000 standard requires high levels of insulation, careful construction techniques, and specially controlled, mechanical ventilation. The R-2000 home features reductions in heating costs of up to 75 per cent, fewer drafts, quieter interiors, and increased comfort levels over conventionally constructed housing.

Energy-Efficient Housing, a 12-part learning series purchased by TVOntario with ministry assistance, was broadcast over the winter of 1984-85. The series prompted tremendous interest in low-energy new housing from Ontario builders and homeowners alike.

The ministry sponsored a 10-week course for builders in February and March 1985 on the nuts and bolts of building to the R-2000 standard. The course was offered in co-operation with George Brown College in Toronto, and was a first step in establishing formal training in Ontario's community colleges and technical schools in R-2000 low-energy new housing techniques.

Also during 1984-85, the ministry was involved in a low-energy housing demonstration in the remote community of Armstrong, Ontario, some 250 km north of Thunder Bay.

The demonstration included energy-efficient retrofitting of existing dwellings, and the development of more energy-efficient designs for new dwellings. The new energy-efficient designs were incorporated into construction plans by the local school board, which subsequently developed a 10-unit low-energy subdivision in the town.

Special construction techniques are involved in building energy-efficient R-2000 homes. During 1984-85, a ministry-sponsored affordable low energy new housing demonstration program assisted Ontario builders to offer this energy performance standard to potential homeowners.

Heating the family home from the ground up

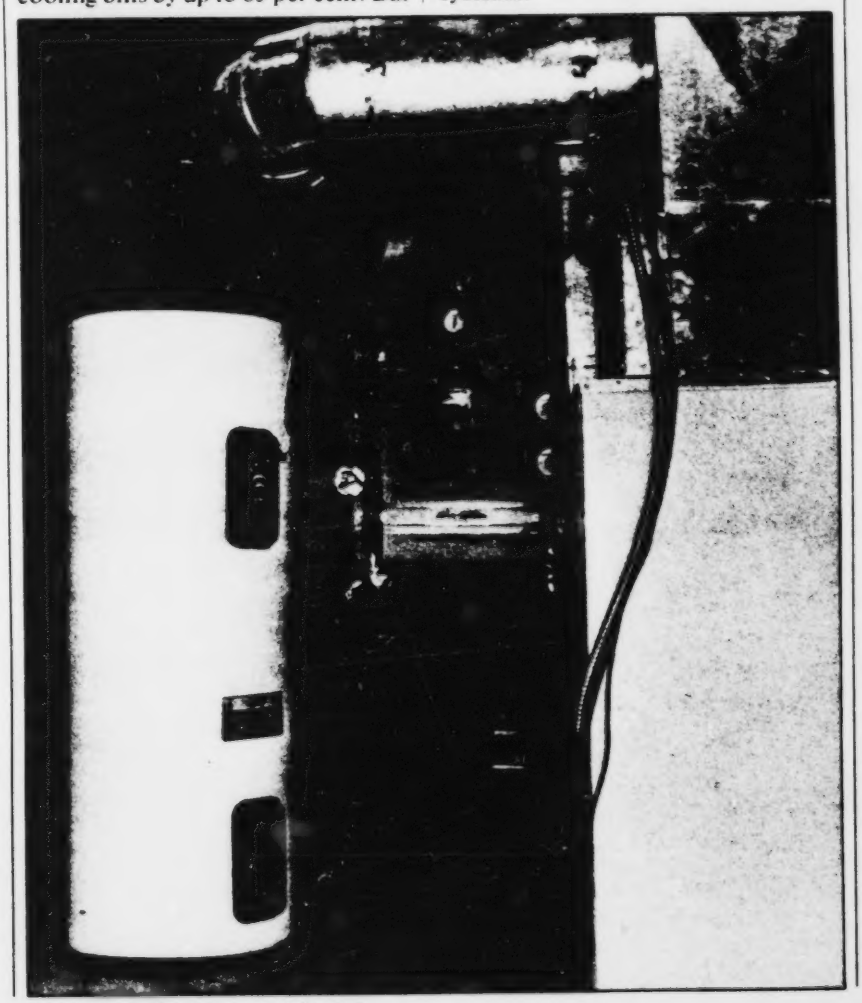
Using the ground as a source of heating and cooling for homes may sound unusual, but that's exactly what a ground-source heat pump does.

The pump draws out the solar energy stored in the ground, and transfers it as heat energy to the home. Heat pumps can also be reversed to function as air-conditioning systems—by pumping the heat from the home back into the ground.

Heat pumps provide space heating and cooling, and supply domestic hot water at a fraction of the operating cost of conventional heating systems, reducing residential heating and cooling bills by up to 65 per cent. But despite the fact that ground-source heat pumps have been used in Swedish homes since 1980, the technology is still relatively new in Ontario.

In January 1985, the ministry, in conjunction with the Ontario construction industry, sponsored a workshop on ground-source heat pumps for engineers, architects and members of the building trades. The day-long workshop in Toronto was a tremendous success, and was attended by more than 400 participants.

The enthusiastic response to the workshop indicates the growing commercial importance of heat-pump technology, and the ministry's commitment to encouraging the development of alternative energy heating systems.



A ground-source heat pump draws heat from the ground and converts it to an energy source for heating and cooling homes—at a fraction of the cost of conventional systems. This 20-kw model also heats water for a domestic hot water system.

Photo Courtesy Deaton Geo-Systems Ltd., Kleinburg

Helping youth help the community

During 1984-85, the ministry helped develop a new community program that increases energy efficiency—and gives unemployed young people some valuable work experience.

With the co-operation of local businesses and community service groups, the ministry's Draftproof Ontario program helped hundreds of low-income homeowners and tenants save money on energy bills by sealing drafty cracks and gaps around windows and doors.

Local young people under the age of 25 were hired and supervised by contractors in co-operation with community service groups. Work crews caulked and weatherstripped cracks and gaps in homes—improving home comfort and lowering heating costs.

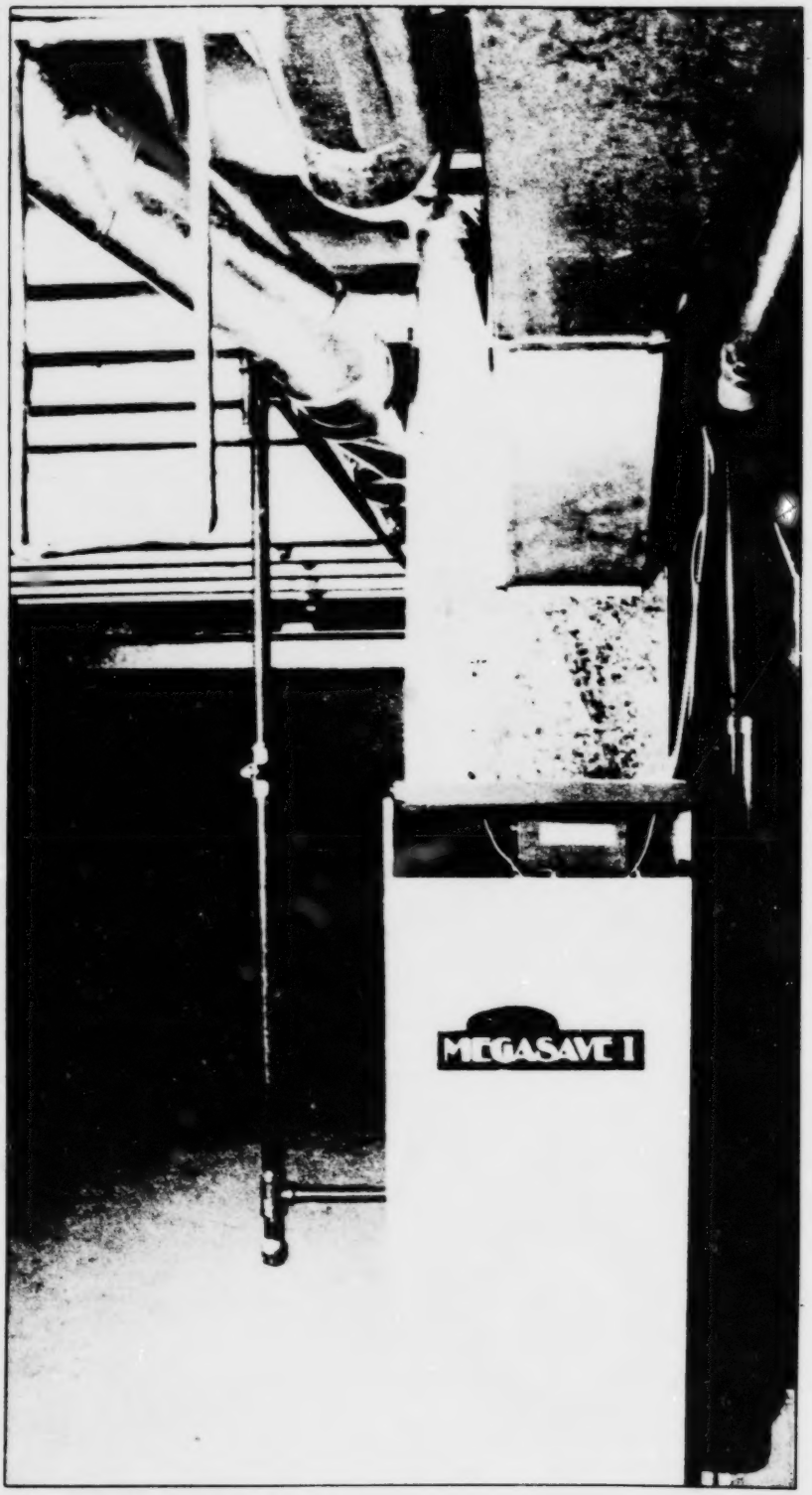
In 1984-85, a total of 30 young people draftproofed over 450 homes in Thunder Bay, North Bay, Kingston, York and North York under the program. At least 10 of the youths hired under the program were offered full-time positions - thanks to the work experience they had gained.

Celebrating a successful partnership

For several years, the ministry has been associated with the Canadian Gas Research Institute (CGRI) of Toronto on a number of research initiatives—including the development of high- and medium-efficiency furnaces designed mainly for residential use.

The CGRI pioneered the design for most high- and medium-efficiency furnaces now made and sold in Ontario — leasing its designs to a number of Ontario-based companies whose sales of these furnaces have grown tremendously in a very short time.

In 1980, only about 20 high-efficiency furnaces were sold in Ontario. In 1984, more than 30,000 high- and medium-efficiency units were manufactured and sold in Ontario — representing some $33-million in total sales, and some 350 manufacturing jobs.



The ministry co-operates with many agencies in research initiatives to improve energy efficiency in Ontario. This high efficiency natural gas furnace designed for residential use is one result of this research.

Helping Ontario's industries become more energy-efficient

Ontario's economy is dominated by industry—and most of Ontario's leading industries are heavy energy-users. Improved energy efficiency can increase industrial productivity, and thus enhance Ontario's ability to compete in global markets.

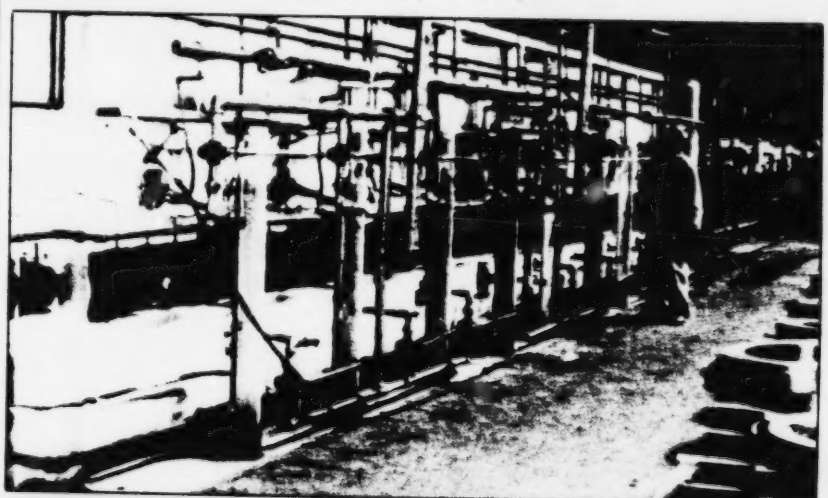
During 1984-85, the ministry helped develop technologies that have the potential to boost Ontario's industrial energy efficiency and strengthen our industries' competitive position.

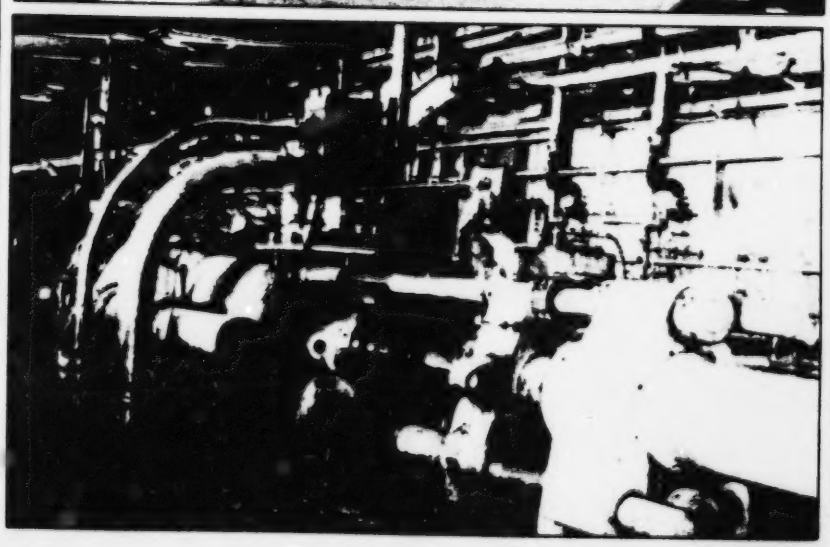
Using computers to audit energy costs

Computers are now helping to make it easier for Ontario industries to monitor the energy consumption of heat-treating furnaces. During 1984-85, a computerized energy audit system, developed by Intersteel Consultants Ltd. of Toronto, with assistance from the ministry and the federal government, was installed at Arrowhead Metals Ltd. in Etobicoke.

With the innovative system, Arrowhead personnel can determine the efficiency of their numerous heat-treating furnaces. The information helps the company make investment decisions for possible retrofits in its plant.

The audit showed that Arrowhead could save up to 14 per cent on its current gas bill, if the recommended retrofits are implemented. The system can be tailored to meet the specific requirements of most plants, and can be readily adapted for use with any industrial furnace fired by natural gas or oil.





A computerized program, developed with ministry assistance, enabled Arrowhead Metals of Etobicoke to monitor the energy consumption of these heat-treating furnaces.

Promoting private & public sector co-operation

Over the years, the ministry's commitment to research and development has helped improve the economics of energy-efficient technology. Since many energy-related ventures serve the interests of both the public and the private sectors, the ministry encourages private investors to get involved in making Ontario more energy-efficient.

One outstanding example of this policy in action is a $10-million industrial cogeneration project in Chapleau – a plant that will be built, owned and operated by the end of 1986 by Foster Wheeler Limited of St. Catharines.

In 1984-85, the ministry contributed $1-million to the construction of this innovative plant that will convert more than 100,000 tonnes of wood waste into 45 million kilowatt-hours of electricity per year.

The Chapleau facility is the first wood-fired electrical plant in the province to enter into a parallel generation agreement with Ontario Hydro. The economic feasibility of the project was enhanced when Ontario Hydro agreed to purchase all the electricity at favorable new rates announced in December 1984.

The Chapleau facility demonstrates both that there is a commercial market for energy-from-waste technologies, and that there are suitable economic opportunities for entrepreneurs in the private sector.

More and more Ontario companies are beginning to examine the economic potential of producing energy from wood waste.

Feasibility studies co-funded by the ministry during 1984-85 concluded that at the Procter and Gamble plant in Hamilton, 100,000 tonnes of wood waste could produce steam for industrial use. At the Canada Starch Company in Cardinal, 90,000 tonnes of wood waste could generate all of the steam requirements for food processing. Both companies are currently evaluating the possibility of implementing this energy-efficient technology.

Manufacturing fuel from industrial waste

Ogilvie Mills Ltd. now uses a state of the art anaerobic waste treatment system at its Thunder Bay wheat-starch/gluten plant to produce methane gas, which it uses as a fuel in its manufacturing operations.

Installed with the assistance of the Ontario and federal Governments, the system is the first in North America to apply this technology to a wheat-starch/gluten waste stream. It enables the company to treat organic industrial wastes economically, and save energy costs at the same time.

Helping to strengthen Ontario's economy

During 1984-85, the small hydro development program made considerable progress toward reaching its objective of developing the economic potential of Ontario's small hydro industry.

Ontario is now recognized as a world leader in small hydro technology. The province's rapidly-growing small hydro industry already produces most of Canada's small hydro exports—which totalled about $14-million in 1984, including both equipment sales and consulting work.

Although the industry is still young, the world market for small hydro was valued at $10-billion in 1981, and could grow to $30-billion by 1990 – so the growth potential for Ontario's small hydro industry is considerable.

Developing small hydro's large potential

Ontario's earliest industrial development was founded on hydro power. Our first mills and factories were powered by the flowing water of nearby streams and dams. With some 570 potential small hydro sites in southern Ontario, and many more in northern Ontario, it still makes sense to harness this indigenous source of renewable energy.

In 1981, the ministry initiated a small hydro program to encourage the development of small hydro sites across the province. The goal was to achieve greater energy security for Ontario—and to develop small hydro technology as a potential export industry. The program had one of its most successful years in 1984-85.

The Elora Mill, a historic landmark that is now an inn and restaurant, is a fine example of a small hydro project. First built as a working mill powered by a water-driven wheel, it now uses the same millstream to generate electricity for the inn and restaurant.

Small hydro projects have considerable potential in northern Ontario. Here, Pam Townsend of P.M. Townsend & Associates—Project Engineer for the Frontier Lodge project in the Elliot Lake area — inspects the site before the installation of a small hydro facility that replaced an expensive diesel generator.

Several ministry-funded demonstration projects illustrating the feasibility of small hydro plants were officially opened during the year.

One typical success is the system at the Elora Mill Country Inn, which harnesses water power from a nearby dam. This small plant provides all the electricity for the inn's hotel and restaurant, and even generates surplus power that is sold to the municipal utility.

Another successful project is the Frontier Lodge , north of Elliot Lake. The lodge replaced a very expensive 20-kilowatt diesel generator with an 80-kilowatt small hydro system. With more than double the amount of available energy at their disposal, the owners can now extend the lodge's services.

Encouraging farmers to be energy-wise

Ontario is Canada's leading agricultural producer, and farmers across the province are striving to maintain that lead by becoming more energy-efficient.

For most farmers, energy costs represent nearly 20 per cent of all operating expenses. In 1984, Ontario farmers spent a total of $223-million on gasoline and diesel fuel alone.

In 1981, the ministry began a five-year agricultural management program, in co-operation with the Ministry of Agriculture and Food. The program was designed to help this vital sector of the Ontario economy find innovative ways to increase energy efficiency and reduce operating costs.

Over the years, the program has funded a wide variety of research and demonstration projects, and has assisted farmers by helping to develop new technology.

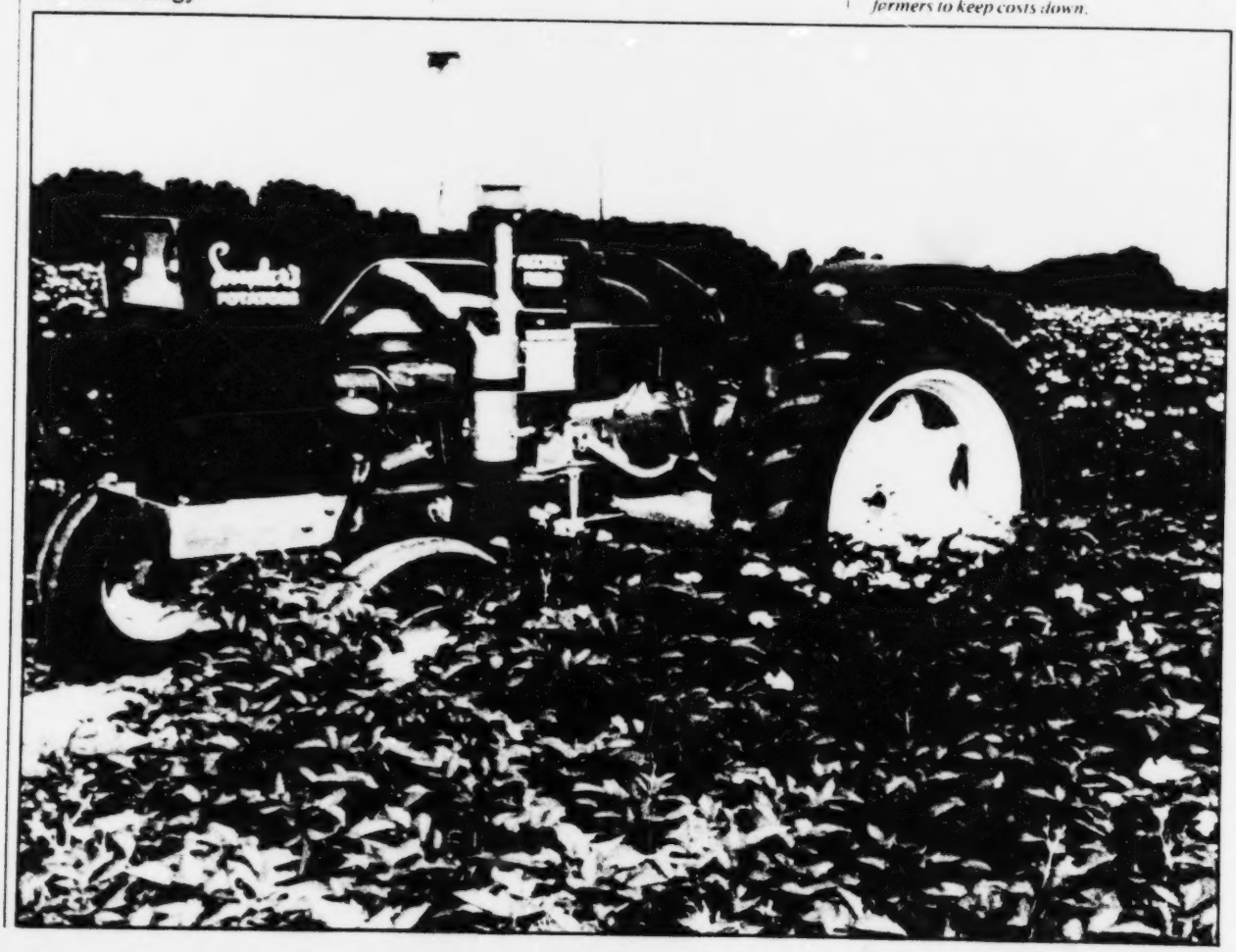
Keeping track of energy use on the farm

During the 1984-85 fiscal year, 16 Ontario farmers began participating in a new agricultural energy audit program developed by the ministries of Energy and Agriculture and Food.

The farmers are recording their energy use patterns in considerable detail—keeping records on fuel consumption in tractors and other farm vehicles, noting electricity use in all facets of the farm operation, and monitoring other energy uses.

When completed, the 16 audits will identify areas where they and other farmers could find potential savings. The audits will also assist the ministry to develop new energy programs to better meet the needs of the agricultural community throughout the province.

During 1984-85, the ministry introduced a new agricultural energy audit program that monitors such things as tractor fuel consumption — a program designed to help Ontario's farmers to keep costs down.



Reducing the cost of drying grain

Ontario's farmers produce some 5,000,000 tonnes of grain a year Traditional methods of drying the grain are inefficient, because most grain dryers can't accommodate a wide range of moisture content. Under-drying leads to grain spoilage, and over-drying causes unnecessary grain shrinkage and fuel consumption. In 1983, Ontario's farmers spent about $22-million on fuel to dry their grain.

To help improve efficiency in the grain-drying process, the ministry introduced a grain dryer retrofit assistance program in November 1984. The program offers grants to Ontario's commercial grain dryer operators to help defray the costs of installing automatic control systems that can both reduce energy use by 10 per cent and retain the grain's quality.

During 1984-85, three companies received grants totalling about $65,000, and the government allocated an additional $2-million for future projects under the program.

This Kettleby greenhouse was assisted by a grant designed to help growers increase energy efficiency. This was one of 136 similar greenhouse projects completed during 1984-85.

Trimming greenhouse heating costs

Ontario's greenhouse industry is large, and its energy costs are high – representing about 20 per cent of all operating costs. In 1983, the ministry introduced a five-year greenhouse energy efficiency incentive grant program.

The greenhouse program helps cover the capital costs of equipment to increase energy efficiency—things like reducing heat loss, investing in improved, energy-efficient lighting and electric motors, and installing micro-processors for automatic control of temperature, ventilation and duty cycling.

During the 1984-85 fiscal year, 136 projects were completed, with grants totalling some $570,000. As well, the program was expanded to include assistance to operations seeking to convert to rock wool culture as a new, low-cost growing medium.

Cultivating energy efficiency

Some 60 research and demonstration projects assisted by the ministry's agricultural energy management program are currently investigating ways to use new technology to improve energy use on the farm.

In one project, a heat pump system was installed to recover excess heat from the ventilation system exhaust in a dairy barn, and use it to heat the farmhouse. The family is now saving 50 per cent on their home heating bill.

In another project, two different experimental heat exchangers were tested for heat recovery in tobacco kilns. The fuel savings achieved were up to 23 per cent.

At a 200-head dairy farm in Cambridge, a newly-constructed anaerobic digestor now converts manure to methane gas to fuel a stationary engine thai cogenerates heat and electricity. The system produces enough hot water to heat the farm's workshop and milking parlor, and enough electricity to meet all the farm's needs and sell excess power to Ontario Hydro.

As well, at a poultry operation in Thamesford, an automatic-feed gasifier now uses waste corn cobs as fuel to heat two barns, a farm workshop and a farmhouse.

Turning to the Future

Looking down the road

What's new in energy-efficient fuels and vehicles? These days, researchers are working to develop new engines—and alternative fuels that are compatible and cost-efficient. During 1984-85, the ministry continued to play an active role in this work by assisting research and development in Ontario.

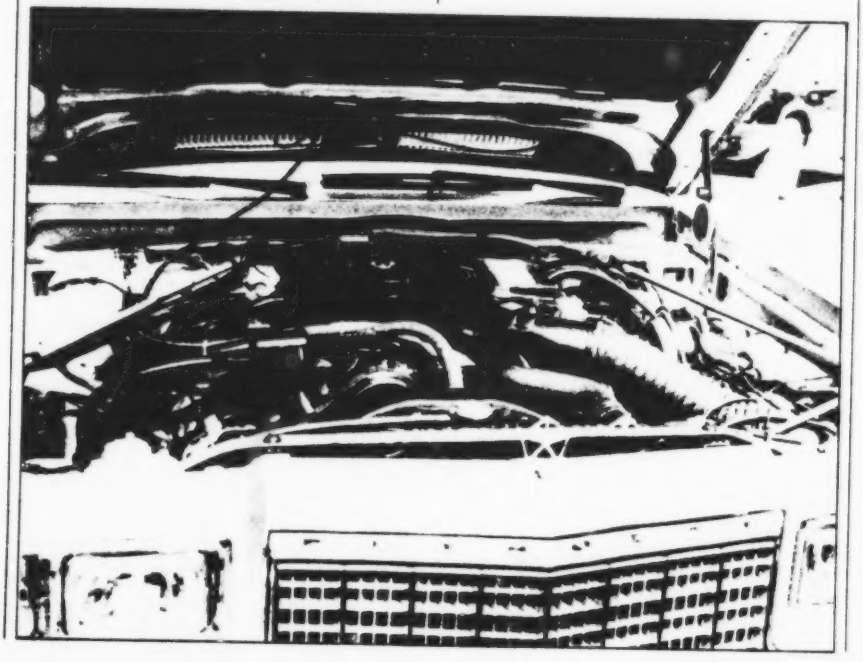
Due to advancing technology and growing acceptance of propane as a transportation fuel, development has now begun on an engine designed specifically to run on propane, to supersede the converted gasoline engines currently in use.

In 1984-85, Chrysler Canada began producing factory-built engines especially for propane. The new engine is expected to be even more efficient, reliable and economical than the propane-powered engines in use today, and the ministry is helping to fund the development of this new engine.

While propane's popularity as a vehicular fuel is growing, it also has potential in the heavy truck market. With ministry assistance, Ontario-based engineers are beginning to develop a large, propane-fuelled engine for heavy trucks.

During 1984-85, in a ministry-assisted project at the Ontario Research Foundation, the diesel engine of a Western Star tractor trailer was successfully converted to run on propane.

The truck is now in commercial use in northern Ontario, and the Foundation regularly monitors the rig's performance. Researchers hope the test engine will provide a blueprint for widespread propane conversions of heavy trucks across Ontario.



The ministry is helping to fund development of this new Chrysler Canada engine, which is designed to run on propane. The engine is expected to be more efficient, reliable and cheaper to run than current propane-powered engines.

During the fiscal year, the Canadian Gas Research Institute expanded its research work to include industrial and transportation applications—and the ministry was in on the ground floor.

One of the problems associated with natural gas as a transportation fuel is the high cost of installing a pumping station. During 1984-85, researchers at the Institute worked toward developing an accurate and economical system for dispensing natural gas, with assistance from the ministry.

The ministry also funded research into natural gas as a transportation fuel in 1984-85 at the Royal Military College (RMC) in Kingston.

Currently, a major challenge for the researchers is to devise a scheme to pump enough natural gas into a tank to provide a reasonable range for the vehicle, at a pressure low enough to avoid requiring huge, heavy tanks.

Scientists at RMC think they may have a solution. The gas can be stored in a light-weight, black carbon disk, that resembles a thin hockey puck. Eventually, scientists hope that a tank filled with carbon disks will be able to store almost as much natural gas at 500 psi as an empty tank filled with natural gas at 3,000 psi.

Today's researchers believe that neat methanol (about 85 per cent pure) may also have potential as a transportation fuel. But before that can happen, more research and development are required to improve methanol engines and fuel systems.

In particular, problems with cold weather engine starting and engine wear need to be solved. When temperatures fall below -20°C, methanol-powered vehicles presently in use either have trouble starting, or won't start at all.

During 1984-85, ministry-funded research on the cold-starting characteristics of methanol continued at the Royal Military College in Kingston. The researchers hope to bring methanol's cold-starting abilities up to those of gasoline, which ignites at temperatures as cold as -30°C degrees.

Methanol research is also occurring on the road—in a three-year study involving the ministry, Energy, Mines and Resources Canada, the Ford Motor Company and Shell Oil.

In 1984-85, the second year of the study, 13 methanol-powered vehicles were monitored carefully by researchers to determine how the cars performed under normal driving conditions. The vehicles' engines were designed and built by Ford, and Shell is developing special additives to fine-tune the fuel.

In the project's final year, researchers will focus on improving the vehicles' cold weather performance, engine durability and fuel-dispensing systems, as well as on improving the efficiency of the cars relative to other competing fuels such as gasoline.

Methanol-powered vehicles such as this one could well be an everyday part of our future.

Checking out the latest electric vans

The electric vehicle—an old idea that went out with flappers and the Charleston—just might be making a comeback.

Until recently, most scientists scoffed at the notion that electric cars would ever be widely used. They argued that electric cars were expensive, constantly broke down, and needed recharging after travelling only short distances.

There's still plenty of controversy, but recent advances in electric technology are making many people take a second look.

In 1984, the world's first mass-produced electric vans rolled off a General Motors assembly line in the United Kingdom. The ministry purchased two of these Bedford CS vans during 1984-85, to test them on Ontario roads over the coming year.

During the year, the Ontario Centre for Automotive Parts Technology received the first of three Chrysler T-115 vans converted to run on electricity, with assistance provided by the ministry and Energy, Mines and Resources Canada.

The Centre will be testing the vans and a variety of advanced battery systems over the next few years, with the help of the Ontario Ministry of Transportation and Communications and Transport Canada. The testing is to determine the reliability and durability of electric vehicles under Ontario driving conditions.

Developing electricity as a technology

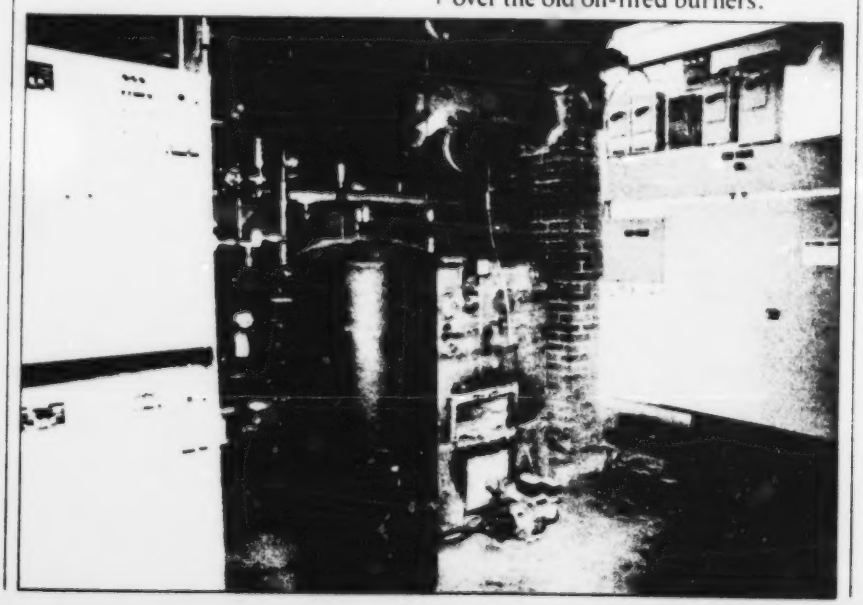
In Ontario, electricity is abundant – and relatively inexpensive—so the province has a unique opportunity to develop electro-technologies.

There are already many examples of electro-technologies in commercial use in Ontario. For example, some manufacturing companies in Ontario have already replaced their old furnaces with electric furnaces and in-line electric induction heating processes. They have found that using the new technology means reduced capital and energy costs, and better productivity.

New applications for electro-technologies include plasma technology in metallurgy, chemical synthesis and toxic waste disposal. As well, electric heat pumps can be applied in the pulp and paper, forest products, food and beverage, textile and chemical products industries, to cite just a few examples.

During the fiscal year, Arc Rental Services Ltd. of Etobicoke installed a unique heat pump system in its plant. The company, which assembles and services diesel welding and generation equipment, wanted a heating system with no open flame.

With the help of the Ontario and federal Governments, the company installed a new ground-source heat pump. The new system was fully operational in 1984-85, and monitoring showed 75 per cent cost savings over the old oil-fired burners.



A unique ground-source heat pump, now provides safe, economical heat for Arc Rental Services Ltd., of Etobicoke.

Several other electro-technologies are also being investigated in Ontario for commercial use—such as microwaves, lasers, infra-red heating, ultraviolet curing, variable speed drives, electron beams, and membranes.

During 1984-85, the ministry continued to support feasibility studies and demonstration projects in electro-technologies. The ministry funded a study of the commercial use of plasma technology in the steel industry, for example, and also encouraged further electro-technology research by Ontario Hydro and the Ontario Research Foundation.

Copying the sun's energy source

One day — some scientists say within the next 20 years—mankind could possess the ability to produce a virtually inexhaustable supply of energy, through fusion power.

Today's researchers in fusion technology are seeking to safely copy the same process that occurs in the sun—the combining of atoms—a process that gives off a tremendous amount of energy.

The fuels for the first operating fusion reactors will be deuterium and tritium, both members of the hydrogen family. Deuterium is plentiful, and can be extracted from ordinary sea water at heavy water plants. Tritium is produced as a by-product in CANDU fission reactors, so Canada already has considerable expertise in the handling of this gas.

During 1984-85, the Canadian Fusion Fuels Technology Project, funded by the federal and Ontario Governments and Ontario Hydro, continued to build upon this expertise by co-ordinating research into the use of tritium in fusion reactors.

Ontario's active role in the international effort to develop fusion power will produce significant benefits to Canadian industry and energy consumers in the years to come.

Experience gained in designing and operating the Pickering reactors shown here is being applied by Ontario Hydro to the development of fusion reactors which, one day, may give us a virtually inexhaustible supply of energy.

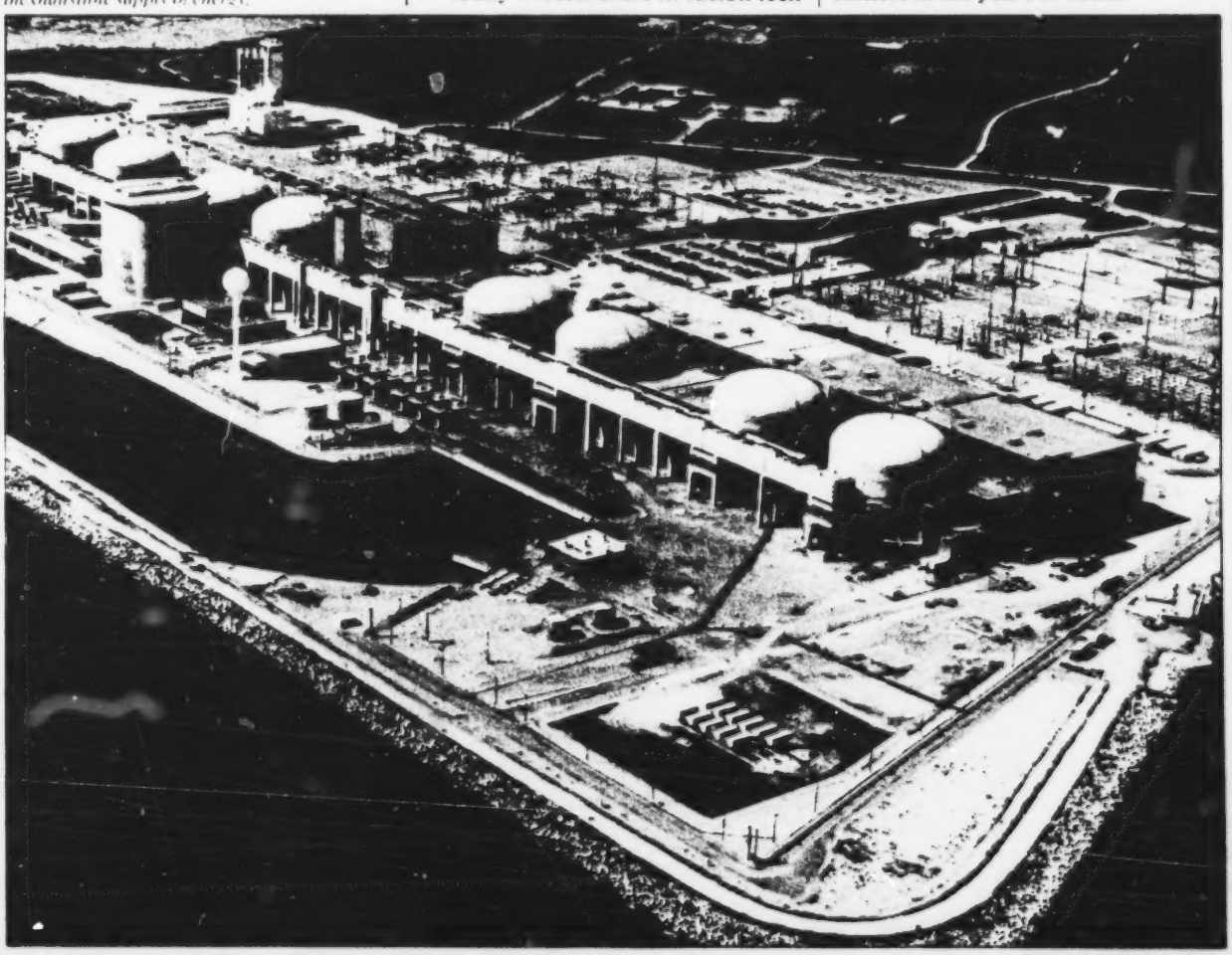


Photo: Courtesy Ontario Hydro

Ministry Financial Statement

TABLE 1
1984/85 ACTUAL EXPENDITURES

PROGRAM	OPERATING $	PROJECT $	TOTAL $	VOTED ESTIMATES $
Energy Conservation	2,487,875	12,314,160	14,802,035	17,945,900
Research & Development	2,716,579	8,887,291	11,603,870	15,998,500
Policy Development	2,551,157	172,867	2,724,024	3,323,200
Administration	7,118,643	0	7,118,643	7,305,381
Ministry Activities	14,874,254	21,374,318	36,248,572	44,572,981
O. E. C.	68,970,621	0	68,970,621	69,250,000
O. E. B.	2,889,984	0	2,889,984	2,565,300
Ministry of Energy	86,734,859	21,374,318	108,109,177	116,388,281

TABLE 2
MINISTRY OF ENERGY PROJECT EXPENDITURES — 1984/85
(TABULATED BY CLIENT GROUP AND FUNDING ACTIVITY)

CLIENT GROUP	RESEARCH & DEVELOPMENT	DEVELOPMENT & DEMONSTRATION	ADVISORY SERVICES	EDUCATION	DIRECT SUPPORT	PROGRAM DEVELOPMENT	TOTAL $	TOTAL PROJECTS
Agri-Industry	0	137,463	0	0	412,696	0	550,159	69
Builders	0	267,250	0	50,000	0	0	317,250	26
Churches/Temples	0	50,000	0	0	0	0	50,000	1
Commercial Real Estate	0	10,000	0	0	0	0	10,000	1
Conservation Authorities	0	210,000	0	0	90,200	0	300,200	2
Consumers	0	0	621,400	2,159,400	0	0	2,780,800	20
Farms	0	309,602	0	2,689	260,251	0	572,542	90
Hospitals	0	43,600	0	0	256,900	0	300,500	7
Housing Co-Ops	0	67,500	0	0	0	0	67,500	2
Industry	373,100	1,422,675	0	50,100	0	0	1,845,875	27
Municipalities	0	595,870	90,000	42,400	1,588,407	0	2,316,677	389
Ontario Government	409,897	1,245,503	113,500	1,049,375	1,743,124	105,805	4,667,204	264
Organizations	3,500	106,000	0	92,200	44,985	0	246,685	14
Research Institutions	2,234,000	26,200	0	0	0	0	2,260,200	18
Retailers	0	10,125	0	0	7,050	0	17,175	2
Schools	0	106,600	0	137,000	33,974	0	277,574	8
Service Firms	248,567	1,140,092	17,800	444,600	158,291	0	2,009,350	61
Tourist Operators	0	336,900	0	0	0	0	336,900	5
Transportation	64,000	170,000	0	0	0	0	234,000	3
Universities/Colleges	478,882	220,403	9,800	7,494	1,497,148	0	2,213,727	71
TOTAL	3,811,946	6,475,783	852,500	4,035,258	6,093,026	105,805	21,374,318	1,080

TABLE 3
MINISTRY OF ENERGY PROJECT EXPENDITURES — 1984/85
(TABULATED BY TECHNOLOGY AND FUNDING ACTIVITY)

TECHNOLOGY	RESEARCH & DEVELOPMENT	DEVELOPMENT & DEMONSTRATION	ADVISORY SERVICES	EDUCATION	DIRECT SUPPORT	PROGRAM DEVELOPMENT	TOTAL $	TOTAL PROJECTS
Combustion Waste	51,445	273,541	0	0	214,500	0	539,486	11
CNG	3,500	210,800	0	0	0	0	214,300	6
Electro-Technology	66,172	552,880	0	0	382,900	0	1,001,952	24
Energy Audit	0	0	0	0	573,484	0	573,484	116
Fusion	329,000	0	0	0	0	0	329,000	3
Hydrogen	2,260,124	0	0	0	0	0	2,260,124	18
Methanol	164,505	150,000	0	0	0	0	314,505	7
Oil Conversion	0	0	0	0	792,137	0	792,137	103
Propane	91,600	565,600	0	0	0	1,400	658,600	6
R-2000	0	267,250	0	250,000	0	0	517,250	27
Retrofit	37,500	496,122	0	0	3,872,153	0	4,405,775	519
Small Hydro	0	983,250	0	0	0	0	983,250	9
Solar	205,000	1,776,452	0	0	0	0	1,981,452	42
Wood Burning	40,472	564,213	0	0	0	0	604,685	12
SUBTOTAL	3,249,318	5,840,108	0	250,000	5,835,174	1,400	15,176,000	903
Energy Study	562,628	470,059	0	24,500	128,652	70,405	1,256,244	69
Marketing/Promotion	0	174,616	852,500	3,760,758	120,200	34,000	4,942,074	108
TOTAL	3,811,946	6,484,783	852,500	4,035,258	6,084,026	105,805	21,374,318	1,080

TABLE 4
RESEARCH & DEVELOPMENT EXPENDITURES

TYPE	1980/81 ($000)	1981/82 ($000)	1982/83 ($000)	1983/84 ($000)	1984/85 ($000)	1984/85 PROJECTS
Solar	2,347.0	4,151.0	5,734.0	3,217.0	2,587.1	42
Waste	2,554.0	2,810.0	4,724.0	4,393.0	704.4	11
Hydrogen	0.0	0.0	972.0	1,554.5	2,951.0	18
Fusion	61.4	138.7	134.0	185.0	429.6	3
Alternatives	0.0	4,017.0	5,497.0	4,526.5	4,931.8	64
TOTAL	4,962.4	11,116.7	17,061.0	13,876.0	11,603.9	138

TABLE 5
ENERGY CONSERVATION EXPENDITURES

CATEGORY	1980/81 ($000)	1981/82 ($000)	1982/83 ($000)	1983/84 ($000)	1984/85 ($000)	1984/85 PROJECTS
Ont. Gov't Buildings	3,408.5	3,451.9	5,305.8	3,008.1	2,091.3	176
Financial Assistance	1,503.8	3,868.2	7,708.4	4,411.8	4,911.5	582
Technology Transfers	1,704.3	2,537.1	3,003.3	3,208.6	2,368.0	67
Technology Development	2,706.8	6,089.1	5,706.2	5,013.4	1,924.0	94
Education/Awareness	5,313.3	3,944.5	3,303.6	2,506.7	3,507.3	21
TOTAL	14,636.7	19,890.8	25,027.3	18,148.6	14,802.1	940

Energy Statistics in Ontario

TABLE 6
ENERGY CONSUMPTION IN ONTARIO (PETAJOULES)

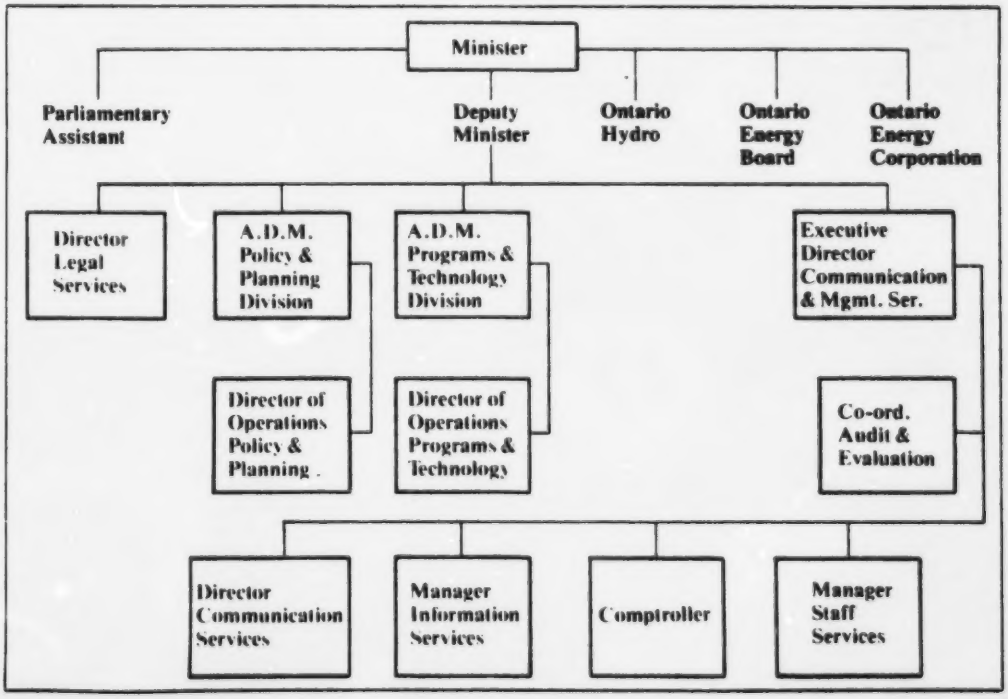
SECTOR	1981	1982	1983	1984	1985
Industrial	828	731	749	814	831
Transportation	591	544	552	571	583
Residential	446	443	417	448	443
Commercial	325	330	342	367	364
TOTAL	2,190	2,048	2,060	2,200	2,221

TABLE 7
ENERGY EFFICIENCY IN ONTARIO*

SECTOR	1981	1982	1983	1984	1985
Industrial Consumption Per Industrial GDP (TJ/$ Million)	44.60	42.20	40.80	40.60	40.00
Transportation Consumption Per Reg'd Vehicle (GJ/Veh.)	100.30	92.90	92.60	95.40	96.40
Residential Consumption Per Household (GJ/Household)	150.70	148.20	137.20	145.00	141.10
Commercial Consumption Per Floor Space (GJ/M²)	2.03	1.98	1.98	2.04	1.98
TOTAL ENERGY CONSUMPTION PER CAPITA (GJ/CAPITA)	253.90	235.00	233.70	245.90	245.80
TOTAL ENERGY CONSUMPTION PER GDP (TJ/$ MILLION)	46.00	45.10	43.80	44.10	42.90

** New and improved numbers compared to previous years.*

Ministry Organization Chart



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If you'd like more information:

Ministry staff are always available to help with inquiries and provide energy information.

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